

A National Biodiversity Offset System: A Road Map for Mozambique



October 2016

A National Biodiversity Offset System

A Road Map for Mozambique

OCTOBER 2016

Contents

Acknowledgements	v
Abbreviations and Acronyms	vii
Executive Summary	ix
Introduction to No Net Loss and Biodiversity Offsets	1
Purpose of this Report	2
The Mitigation Hierarchy and Biodiversity Offsets	2
International Drivers for No Net Loss Behavior	3
Guiding Principles	3
Mozambican Readiness—The Building Blocks	5
The Mozambican Legal and Regulatory Framework	5
Sufficient High-Level Government Commitment	7
Identification, Mapping, and Legal Gazetting of Offset Areas	7
Representativeness of Mozambique’s Protected Area Network and Notes on Habitats	8
Analysis	13
The Protected Area Network and No Net Loss	13
Conservation Trust Fund or Similar Mechanism for Managing Funds	16
No Net Loss—A Road Map for Mozambique	19
Getting the Legal Framework in Place	19
EIA Legislation	20
Determining the Most Suitable Geographic Locations for Offsets	21
Developing Implementation Mechanisms for an Aggregate Offset System	24
Activity 1: What are the Biodiversity Offsetting Activities and Where Will They Be Carried Out?	26
Activity 2: How Will the Biodiversity Offset Be Managed?	30
Activity 3: How will the Biodiversity Offset be Funded Over Time?	32
Activity 4: How will the Offset be Monitored and Evaluated?	32
Learning and Training	33

Roadmap for the Way Forward	35
Preparatory Activities, the Building Blocks.....	35
Legislative Framework	35
High level Government Commitment	35
Mapping and Gazetting of Offset Areas	36
Trust Fund Establishment	36
Preparatory Activities, Development of Implementation Mechanisms	36
Identification of Areas Where Biodiversity Offsets may not be Appropriate or Feasible	36
Development of Management and Coordination Structures	37
Pilot Experiences	38
Learning and Training	38
Conclusions	39
Bibliography.....	40
Relevant Legislation	43

Acknowledgements

This document was authored by Peter H. Bechtel and Sean Nazerali (consultants) under the guidance of Douglas J. Graham, George Ledec, and Magda Lovei, all of the Africa Region of the World Bank. Thanks are extended to all those who contributed their time and inputs: Giacomo Cozzolino, Conrad Eddie Savy, Sally Johnson, Luis Honwana (BIOFUND), Paulo Sithoe, Ross Hughes, and Carlos Serra. Particular thanks to Josefa Jussar of the Ministry of Environment, Lands, and Rural Development for her effort and initiative in promoting “No Net Loss” in the Mozambican national developmental agenda.

Abbreviations and Acronyms

AMAIA	The Mozambican Association of Environmental Impact Assessment
AQUA	National Agency for Environmental Quality Control
BIOFUND	Foundation for the Conservation of Biodiversity
BBOP	Business and Biodiversity Offsets Programme
BOMP	Biodiversity Offset Management Plan
CTF	Conservation Trust Fund
DINAIA	Mozambican Environment Ministry's Department of Impact Assessment
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EP	Equator Principles
EPDA	Scoping Study for EIAs (<i>Estudo de Pré-viabilidade Ambiental e Definição do Âmbito</i>)
ETC	Expert Technical Council
IBAT	Integrated Biodiversity Assessment Tool
ICMM	International Council on Mining and Metals
IFC	International Finance Corporation
INP	National Petroleum Institute
IUCN	International Union for the Conservation of Nature
MICOA	(Former) Ministry for the Coordination of Environmental Affairs (<i>Ministério para Coordenação de Acção Ambiental</i>)
MIREME	Ministry of Mineral Resources and Energy
MITADER	Ministry of Land, Environment and Rural Development
NNL	No Net Loss
NORAD	Norwegian Agency for Development Cooperation
PA	Protected Area
PS	International Finance Corporation Performance Standards
SLO	Social License to Operate
TORs	Terms of Reference
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
WWF	World Wide Fund for Nature

Executive Summary

Mozambique is well positioned to take advantage of new opportunities for biodiversity protection and new revenue streams for conservation that No Net Loss and biodiversity offsetting can provide, while also minimizing environmental damage resulting from rapid economic development. This report seeks to map out a path for the establishment of a national-level aggregate biodiversity offset system in Mozambique.

There is a growing consensus in the business community as well as at the level of key government ministries, such as the Ministry of Environment, Lands, and Rural Development (MITADER) and the Ministry of Mineral Resources and Energy that a national-level compliance framework promoting biological offsets is a valuable tool for mitigating adverse impacts of large-scale development projects. Such a framework can also provide additional resources for biodiversity conservation. A national compliance framework could assist project developers to fulfill their obligations to comply with IFC and Equator Principles performance standards, thus providing benefits for multiple stakeholders. Indeed, MITADER is currently revising existing EIA regulations and has consulted specialists from civil society to help build a compliance biodiversity offsetting/ no net loss framework within existing EIA regulations and processes. The new draft regulations also propose peer review and independent specialist monitoring for the highest category projects (Category A+) in order to improve technical quality, impact, and sustainability. Environmental and Biodiversity Offset Management Plans are envisaged under the regulations. Peer review and specialist monitoring are also seen as key opportunities for building the capacity of government, private sector, civil society, and community stakeholders. The regulations are intended to be compatible with the IFC 2012 Performance Standards to streamline compliance for project developers.

The Mozambique Protected Area (PA) network includes both publicly managed areas (parks and reserves) and privately managed ones (such as hunting reserves and games farms) and covers 26% of the country's land area. The PA network does contain representative samples of most of Mozambique's biodiversity, but it is severely underfunded, receiving an estimated 9% of the funds it needs annually to provide a basic "no frills" level of biodiversity maintenance. Additional funding from offsets into the PA network would create positive biodiversity impacts and would serve to aggregate individual offsets. There is however some unique biodiversity outside of protected areas; we propose a flexible and adaptable strategy formulated to bring these under formal protection, using an expanded list of protected area categories introduced in the recently-gazetted Conservation Law (no. 16.2014).

Challenges in the classification of modified, natural, and critical habitat, as well as identification of “no-go” areas, are also discussed. An example of the problems to be overcome is that presented by miombo, a type of woodland that is based on a disturbance regime and regenerates quite vigorously after disturbance ceases. The distinction between a miombo that looks “natural” and a miombo that looks “modified” is thus often not a question of geography but rather timing, and depends on how recently an area was disturbed by itinerant agriculture. Recommendations for national interpretations of these categories are elaborated, and some of the most important “no go” and critical habitats identified.

Ecosystem services are also discussed. It is recommended that changes in services delivered to specific populations (such as a water supply to a village) are handled through stakeholder engagement, while for those delivered at regional, national, or worldwide scales (such as carbon sequestration or rainfall infiltration in a river basin), they be offset where possible.

The mechanics and activities needed to establish an aggregated offset system are discussed and challenges and opportunities identified. One distinct advantage in Mozambique is the presence of an existing conservation trust fund that meets international standards, the BIOFUND. BIOFUND is an independent, private not-for-profit entity with public benefit status, and seems to be well-placed to receive, manage, and disburse funds for offsets over time. BIOFUND is also establishing a database on biodiversity and is currently undertaking the mapping of the country’s habitat types within a geo-referenced online database, as well as attempting to classify them as modified, natural, and critical habitats to help guide investment decisions. One challenge is that BIOFUND still lacks a monitoring and evaluation system that can track biodiversity outcomes. Another is that BIOFUND is still finalizing its disbursement criteria and procedures. All of these are currently under development.

Development of human resources is also a challenge; training and capacity building will be important activities for all stakeholders in an offsets system, including regulators as well as project developers, EIA firms, and civil society stakeholders. Stakeholder engagement and communications will be important to build understanding and support within key governmental and private sector stakeholder groups, as well as among the public at large. Governmental willingness is likely to grow to the extent that biodiversity offsetting is seen as compatible with existing national goals. Private sector willingness will be generated to the extent that a biodiversity offsetting scheme offers real value to companies required to offset to meet national or international obligations. Broad public support will depend on the extent that biodiversity conservation is seen to be compatible with and supportive of human livelihoods.

Introduction to No Net Loss and Biodiversity Offsets

With large-scale development projects leaving a trail of damaged habitat and lost biodiversity, there are growing efforts to encourage project promoters (particularly within the private sector) to ensure that such adverse impacts are minimized. One such approach is known as “No Net Loss” (NNL) of biodiversity. No Net Loss requires the application of a full suite of tools known as the mitigation hierarchy, including avoidance, minimization, restoration, and, in some cases and as last resort, biodiversity offsets. When an offset is required, the full, actual residual impact of a project on biodiversity must be calculated and then fully offset or compensated by activities to protect the same type of biodiversity as that which would be lost or degraded under the project.

Biodiversity offsets have been defined as *“measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development after appropriate prevention and mitigation measures have been taken. The goal of biodiversity offsets is to achieve no net loss and preferably a net gain of biodiversity on the ground with respect to species composition, habitat structure, ecosystem function and people’s use and cultural values associated with biodiversity.”*¹

The global annual market for offsets grew from about US\$1.8 to US\$2.9 billion in annual compensation payments in 2009, to at least US\$2.4 to US\$4 billion in 2010.² It is projected that offsets could generate up to US\$5.2 to US\$9.8 billion globally by 2020.³ Much of this growth is driven by environmental requirements

established by the financial sector. In particular, the International Finance Corporation (IFC) 2012 Performance Standards, specifically PS6 on Biodiversity Conservation and Sustainable Management of Living Natural Resources, call for compliance with NNL⁴ when high biodiversity habitats are disturbed. In 2013, the Equator Principles Banks also endorsed the use of the 2012 IFC Performance Standards for its member banks.

Mozambique is a developing country that places emphasis both on the development of its significant natural resources and on environmental protection. In its position as both a biologically-diverse and at the same time low income country, Mozambique needs to find a way to reconcile needed economic development with protection of the natural renewable resource base for future generations. Provided that the current focus on avoidance and mitigation of impacts is maintained and strengthened, a national biodiversity offsetting scheme for Mozambique might be a valuable additional tool for mitigating adverse impacts of large-scale development projects, while mobilizing additional resources for biodiversity conservation, complementing and reinforcing the existing legal framework for environmental management in Mozambique. It could also assist project developers to fulfill their obligations to comply with IFC and Equator Principles environmental performance standards, thus providing wins for multiple stakeholders.

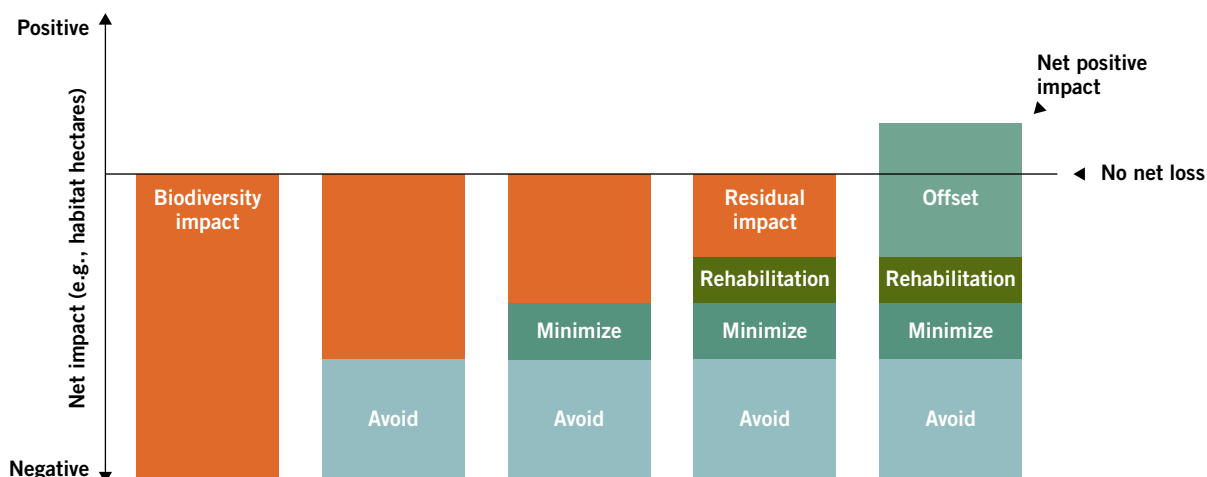
¹ Business and Biodiversity Offsets Programme (BBOP). 2012. Biodiversity Offset Design Handbook-Updated, p.11.

² Madsen, B., Carroll, N., & Kelly, M.B., 2010. State of Biodiversity Markets Report: Offset and Compensation Programs Worldwide. <http://www.ecosystemmarketplace.com/documents/acrobat/sbdlmr.pdf>

³ Parker, C., Cranford, M., Oakes, N., Leggett, M. ed., 2012. The Little Biodiversity Finance Book, Global Canopy Programme; Oxford. p.73.

⁴ As described in more detail later in this report, PS6 requires NNL “where feasible” in Natural habitat, and a Net Positive Impact for operations in Critical Habitat. These targets must be achieved through the application of the full mitigation hierarchy, with offsets as the last step in this process. International Finance Corporation Performance Standard 6, paragraphs 15 and 18.

FIGURE 1. The Mitigation Hierarchy



Source: ICMM IUCN (2012). Independent Report on Biodiversity Offsets. Prepared by The Biodiversity Consultancy.

Purpose of this Report

This report seeks to map out a path for the establishment of a national-level biodiversity offset system in Mozambique. As such, it (i) lays out the issues involved in launching such a system in the country; (ii) reviews system elements both currently in place and under development; (iii) analyzes possible regulatory frameworks; and (iv) highlights the steps needed to allow for development of offsetting programs.

The Mitigation Hierarchy and Biodiversity Offsets

Biodiversity offsets are possible only for projects that (directly or indirectly) cause some harm to biodiversity; hence, the need for offsetting (compensatory) measures. Biodiversity offsets are regarded as a last resort, after all other types of mitigation options have been applied and adverse impacts upon biodiversity (known as residual impacts) still remain. Biodiversity offsets are not to be used as a “quick fix” so that proper environmental practices can be ignored or minimized. If needed, the offset is designed to compensate for residual impacts. This approach is known as the “mitigation hierarchy”, depicted in the diagram above.

Even before the Mitigation Hierarchy can be applied, it is essential to have an understanding of

which land or water areas harbor biodiversity and ecosystem services that are so unique and irreplaceable that they should be regarded as “no-go areas” where damaging development activities should not be allowed. Though Mozambique has inadequate data to be able to define such areas in a comprehensive manner nationwide, there are known sites within Mozambique that do contain unique biodiversity. These should be no-go areas where damaging development projects should entirely be avoided, since the unique biodiversity features that would be lost at such sites could not feasibly be offset.

This Roadmap seeks to provide a workable framework for appropriate biodiversity offsets in Mozambique, despite existing constraints of data deficiency, institutional weaknesses, and underdeveloped human capacity. Industrial development will not wait for perfect biological knowledge to be obtained first. Even with constraints, No Net Loss is a valuable goal to aim for and a useful tool for helping the national Government to achieve its biodiversity objectives. This Roadmap will need to be updated and adapted as new information becomes available, and should assist in providing some of that new information itself. It is primarily designed as a short-term planning document. As such, this Roadmap proposes implementable actions within the current national context, using the best available information and tools.

International Drivers for No Net Loss Behavior

While the desire of some corporate entities to be good environmental citizens does play a role, the main drivers for the increase in no net loss projects come from recent environmental standards put in place by development finance organizations. In particular, the International Finance Corporation (IFC) has a series of Performance Standards (PS's) for all its private sector clients. These Standards (updated in 2012), particularly PS6, require that the Mitigation Hierarchy be fully complied with, including the identification of any significant residual impacts. PS6 then goes on to divide habitats in three main categories: Modified, Natural, and Critical.⁵ While in Modified Habitats, the performance standard only requires application of the mitigation hierarchy as appropriate, in Natural Habitats a No Net Loss outcome is required where feasible,⁶ and in Critical Habitats, a Net Gain of the critical biodiversity values impacted is prescribed.⁷

As these are obligatory standards for all projects that receive IFC funding, their importance for project developers should not be underestimated. In Mozambique, several large companies are receiving IFC funding, such as Portucel and Lurio Green Resources in the forestry sector and SASOL, the largest South African natural gas company, in the petroleum sector. IFC is also planning to participate in the Tete-Nacala railway line, owned by a consortium led by Vale.

IFC standards are increasingly used by other lenders as well. Approximately 80 major financial institutions have now committed to the Equator Principles (EP), which have been designed to “ensure that the Projects [they] finance and advise on are developed in a manner that is socially

responsible and reflects sound environmental management practices.”⁸ While these are voluntary standards, Equator banks provide approximately 70% of the international finance in the developing world, making them major players in every market across the African continent, including Mozambique.

Guiding Principles

Based on international best practice⁹ with adjustments for the Mozambican context, the guiding principles for biodiversity offset design, as promoted in this Roadmap, are as follows:

1. **Adherence to the Mitigation Hierarchy:** A biodiversity offset is a commitment to compensate for significant adverse residual impacts on biodiversity, identified after appropriate avoidance, minimization and on-site rehabilitation measures have been taken according to the mitigation hierarchy;
2. **Limits to what can be offset:** There are situations where residual impacts cannot be fully compensated for by a biodiversity offset because of the irreplaceability or vulnerability of the biodiversity affected;
3. **Landscape context (aggregate offsets):** A biodiversity offset should ideally be designed and implemented in an aggregated manner within a national or other large landscape. This would enable it to achieve the expected verifiable conservation outcomes while (i) taking into account available information on the full range of biological, social and cultural values of biodiversity and (ii) supporting an ecosystem approach;
4. **No Net Loss:** A biodiversity offset should be designed and implemented to achieve verifiable conservation outcomes that can reasonably be expected to result in no net loss and preferably a net gain of biodiversity;
5. **Additionality:** A biodiversity offset should achieve conservation outcomes above and

⁵ Note that the biodiversity values and/or ecosystem services that serve to classify Critical Habitats may also be found within Modified Habitats. For the purposes of clarity, when this report uses the phrase, “Modified Habitats”, it is assumed that that habitat has been investigated and found to contain no Critical Habitat biodiversity values or ecosystem services. If Critical Habitat values are present, then that habitat shall be referred to as “Critical Habitat.”

⁶ PS6, paragraph 15.

⁷ PS6, paragraph 18. PS6 requires net positive impact for the specific biodiversity values that trigger critical habitat, and the ecological processes that support them.

⁸ The Equator Principles, June 2013, p.2.

⁹ The following principles were defined by BBOP, and have been taken from the Biodiversity Offset Design Handbook—updated.

beyond results that would have occurred if the offset had not taken place;

6. **Stakeholder participation:** In areas affected by the project and by the biodiversity offset, the effective participation of stakeholders should be ensured in decision-making, including the evaluation, selection, design, implementation, and monitoring of the offset;
7. **Equity:** A biodiversity offset should be designed and implemented in an equitable manner, which means the sharing among stakeholders of the rights and responsibilities, risks and rewards associated with a project and offset in a fair and balanced way, respecting legal and customary arrangements. Special consideration should be given to respecting both internationally and nationally recognized rights of indigenous peoples and local communities;
8. **Long-term outcomes:** The design and implementation of a biodiversity offset should be based on an adaptive management approach, incorporating monitoring and evaluation, with the objective of securing long-term outcomes that last at least as long as the project's impacts and preferably in perpetuity;
9. **Transparency:** The design and implementation of a biodiversity offset, and communication of its results to the public, should be undertaken in a transparent and timely manner;
10. **Science and traditional knowledge:** The design and implementation of a biodiversity offset should be a documented process informed by sound science, including an appropriate consideration of traditional knowledge.

Mozambican Readiness—The Building Blocks

Under an aggregate offsets system, biodiversity offsets would be prepared systematically within a larger landscape context, rather than in an isolated, *ad hoc* manner. Among the necessary conditions for establishing an aggregate offset system in Mozambique are the following four key “building blocks”, which are described further below:

1. A supportive legal and regulatory framework that requires all large-scale private and/or public projects within specific categories to comply with offset requirements;
2. Sufficient high-level Government commitment;
3. Identification, mapping, and legal gazetting of offset areas; and,
4. A well-governed conservation trust fund or similar mechanism for receiving funds from projects to be offset and applying the funds to the conservation areas in which offsetting is to be implemented.

The Mozambican Legal and Regulatory Framework

Mozambique currently does not have a single policy or specific regulatory framework for biodiversity offsets, but does have a range of policy and regulatory instruments that provide for the possibility of such offsets.

There is a wide-ranging and reasonably well-developed legal framework for the environment and for conservation, including, *inter alia*, the Land Law, Environment Law, Fisheries Law, Forest and Wildlife Law, and Tourism Law (together with their associated regulations such as for example the Regulations for Environmental Impact Assessment, Forestry and Wildlife Regulations, and General Regulations for Maritime Fishing). While there are

still areas that can and should be improved, there seems to be a solid legal basis for developing a No Net Loss system in the country. Two key specific legal instruments that support this are as follows:

1. **Environmental Law (Law 20/1997).** The Environmental Law is the overarching legal framework for environmental matters in Mozambique. Particularly relevant here for No Net Loss is Article 4, which discusses the general principles, specifically Principle 7 (the principle of Responsibility), on the basis of which “whoever pollutes or in any way degrades the environment shall always have the obligation to repair or compensate for the resulting damage.” While no regulations are in place to implement this provision as of yet, this is an important starting point. Article 15 of the same law decrees that the issuance of an Environmental License precedes the issuance of any other commercial license. Since the license itself is only granted after the completion of an environmental and social assessment process, this is very strong protection for the environment, and opens the space for inserting offset design into the process.
2. **Environmental Impact Assessment Legislation.** The current regulations for environmental and social impact assessment are predominantly contained in the recently updated Decree 54/2015, although some sectors such as mining (Decree 26/2004) and petroleum (Decree 56/2010) have their own specific decrees with additional details.

According to these legal instruments, the Mozambican environmental and social assessment process is supposed to:

1. Analyze the project;

2. Classify it, based on expected impacts, into one of four categories, with different levels of environmental impact assessment rigor required for each;
3. Identify all environmental impacts (quantitatively or at least qualitatively);
4. Require the proponent to develop mitigation measures (following the mitigation hierarchy);
5. Require the preparation of an Environmental Management Plan; and
6. Require a Compensation Plan (but usually only for social impacts).

Once the applicable environmental documents are approved, the corresponding plans then become part of the project's specific legal framework, and compliance with the applicable conditions becomes a binding requirement on the project developer. From a biodiversity offsets point of view, this means that if an Environmental Management Plan stipulates that an offset will be carried out, then this becomes mandatory for the development, even if the project is sold to another company. The 2015 regulation specifically refers to the production of a Biodiversity Offset Management Plan where necessary.

The 2015 Environmental Regulations update has introduced a series of useful improvements to the process. The new regulations not only create guidelines for determining no go areas, but add a Peer Review requirement in the new category A+, a category designed specifically to accommodate the so-called “megaprojects” that are expected to have high impacts. Specific No Net Loss provisions have however not been included in this revision, due to the fact that the new decree does not affect the mining and petroleum industries, as these have their own specific legislation. However, it is the intention of the Ministry to introduce a specific decree for No Net Loss in the near future.¹⁰

The specific environmental regulations for the petroleum sector (Decree 56/2010) require the relevant Environmental Impact Assessment (EIA) to include the possibility of rehabilitation and

The term “protected area” has a specific meaning in the Mozambican legal framework, as defined in the new Conservation Law (Law 16/2014). Articles 13 to 25 describe in detail the various categories of protected area in Mozambique. These range from total protection zones with exclusion of human activity through classic wildlife reserves, biosphere-type reserves, community conservancy areas, monuments, municipal ecological parks, official hunting areas, and privately owned game farms. The term “protected area” as used in this document conforms to the Mozambican legal definition. “Conservation area” is used as a synonym.

compensation of negative environmental effects,¹¹ as well as requiring that the cumulative impacts be taken into account.¹² Although Mozambican EIAs have thus far mostly not complied with this requirement—partly due to lack of clear guidance on the acceptable mechanisms for doing so—biodiversity offsets are clearly an available tool to realize this obligation.

Other incoming legislation and policies are increasingly moving in the same direction. The new Government Five Year Plan (Parliamentary Resolution 12/2015, of 14 April¹³), has “sustainable and transparent management of natural resources and the environment” as one of its 5 priority areas, on an equal basis with for example “the promotion of employment, productivity, and competitiveness”. The new draft Country Biodiversity Strategy explicitly discusses no net loss. The new Conservation Law (16/2014) actually mandates no net loss for any development project inside a protected area (see sidebar). Overall, while currently only the new Conservation Law requires No Net Loss, the Mozambican legal framework is generally conducive to the concept and contains no structural barriers to implementation of international standards.

¹⁰ Pers. Communication.

¹¹ Decree 56/2010, Article 13.1(n).

¹² Decree 56/2010, Article 13.1(t).

¹³ Boletim da República, I Serie—Numero 29.

Sufficient High-Level Government Commitment

There are several different ministries that are important for establishment of a system of aggregated biodiversity offsets. There appears to be a genuine interest among key Ministries such as for example the Ministry of Land, Environment, and Rural Development (as the champion ministry) and Mineral Resources and Energy (responsible for one of the sectors most likely to offset). New legislation and new policies are also increasingly moving in this direction as noted earlier. Mozambique has already surpassed its commitments under the Convention for Biodiversity, with approximately 26 percent of the country's land area under some form of legally protected status.

One of the main activities moving forward will be to demonstrate that adhering to No Net Loss may actually make certain types of large development projects move more quickly, with fewer adverse impacts than the current practice. The logic here is that so much international finance already depends on compliance with the IFC Performance Standards that the development of a national biodiversity offsetting system would not mean an increase in requirements; rather, it would streamline compliance by providing clarification regarding the specific circumstances under which offsets are required, along with when and where an offset should be applied. A compliance No Net Loss approach is an opportunity for the national government to shape international requirements to conform to local reality.

Identification, Mapping, and Legal Gazetting of Offset Areas

Mozambique has been active in the declaration of new protected areas, with more than 1.2 million hectares added in 2013/14 alone. As a result, the currently gazetted Conservation or Protected Areas (PAs) in Mozambique cover approximately 21 million hectares, which represent 26% of the country's land surface. Of this area, approximately one third is managed by the public sector, in many

FIGURE 2. Protected Areas in Mozambique as of June 2014



Note: Fazendas de Fauna Bravia—game farms—are not included in this map. The Lake Niassa Reserve is just visible as a thick black line.

cases with support and technical assistance from NGOs, and two thirds is managed by the private sector. With this extensive network, much of the biodiversity in the country is already represented within the Conservation Areas system. Only 6.6% of the 366 species present in Mozambique listed by the IUCN Red List as critically endangered, endangered, vulnerable, and near threatened are not present in the current National Parks and Reserves.¹⁴

¹⁴ BIOFUND, preliminary study results. Pers. Communication, 2016. The number cited combines both recorded species and IUCN species distribution maps' overlap with Parks and Reserves in Mozambique. The study does not cover the coutadas, fazendas, or community areas.

REPRESENTATIVENESS OF MOZAMBIQUE'S PROTECTED AREA NETWORK AND NOTES ON HABITATS

The Fifth National Report on the Implementation of the Convention on Biological Diversity in Mozambique summarizes the current state of Mozambique's biodiversity and protected area coverage, concluding that Mozambique's protected area network is largely representative.¹⁵ There are some gaps however which will be highlighted in the discussion below.¹⁶

The report notes that Mozambique has a high diversity of existing ecosystems, with four main categories of natural ecosystems consisting of terrestrial, marine, coastal, and freshwater (includes lakes, rivers, and wetlands).

¹⁵ Ministry for the Coordination of Environmental Affairs (2014). Fifth National Report on the Implementation of Convention on Biological Diversity in Mozambique. Maputo. MICOA. p125.

¹⁶ Additionally, an informal but informative inventory of the country's conservation areas can be found at <http://tinyurl.com/lxg3xuw>.

Terrestrial Ecosystems

Terrestrial ecosystems are subdivided into four phytogeographic regions, these being: Zambezi Regional Center of Endemism; Swahili Regional Center of Endemism; Regional Transition zone of Swahili-Maputaland; and Maputaland-Tongaland Center of Endemism. These are made up of five different biomes, subdivided into 12 ecoregions. See the table below for conservation status of each of these ecoregions.

The first ecoregion in this table, the Coastal Forest Mosaic of Zanzibar—Inhambane, merits further discussion as it originally covered nearly all of the coastal area of the country and is considered critically endangered. The map shows the distribution of this type of coastal forest mosaic in Mozambique.

Zanzibar Inhambane Coastal Forest Mosaic originally extended from the Tanzanian border nearly all the way to the capital city of Maputo. The rest of the coast, from Maputo to the South African border, was originally covered by the Coastal Forest Mosaic of Maputaland. As the word 'mosaic' suggests, Mozambican coastal forests,

FIGURE 3. Conservation Status of the Different Ecoregions that Occur in Mozambique

Biomes	Ecoregions	Conservation status	Localization
Tropical and subtropical rainforest	Mosaic of Coastal Forest of Southern Zanzibar-Inhambane	Critical	From the Rovuma River border of Tanzania in Cabo Delgado province up to Limpopo river in Gaza.
	Mosaic of Coastal Forest of Maputaland	Critical	Maputaland Region (from Canhana river up to Ponta de Ouro)
Prairies, savannas and shrublands tropical and subtropical forests	Shrubland Mopane of Zambeze	Relatively stable	Along the Zambezi Valley
	Southern Shrubland Miombo	Vulnerable	Western region of the country, including the Gorongosa region.
	Woodland-shrubland of Southern Africa	Threatened	Along the Elephant River
Flooded grasslands and savannas	Flooded savannas of Zambezi coast	Critical	Along the valley of the Zambezi, Púnguè, Buzi and Save rivers.
	Flooded grasslands of Zambezi	Relatively stable	Occurs in a patchy form along the Zambezi Delta.
	Halophytes of Maksadgad	Relatively stable	Valley of the Chengane River (Gaza)
Grasslands and shrublands of the mountains	Forest and grassland mosaic of the Rift Austral mountains	Threatened	Several chain of discontinuous mountains in the north and center of the country.
Mangroves	East Africa Mangroves	Critical	Along the Zambezi Delta and Limpopo (Quelimane, Beira)
	Southern Africa Mangroves	Threatened	South of Maputo

Source: Ministry for the Coordination of Environmental Affairs (2014). Fifth National Report on the Implementation of Convention on Biological Diversity in Mozambique. Maputo. MICOA. p 31. after Burgess et al., 2004.

even in the near-pristine state, generally form a patchwork with more open areas, wetlands, riverine vegetation, miombo, and anthropogenized areas. Over the past 100 years, most of these mosaics have been altered by the agricultural activities of the local population and/or by population centers, leading to reduced area of forest patches and other natural habitats within a broader matrix of anthropogenic vegetation.

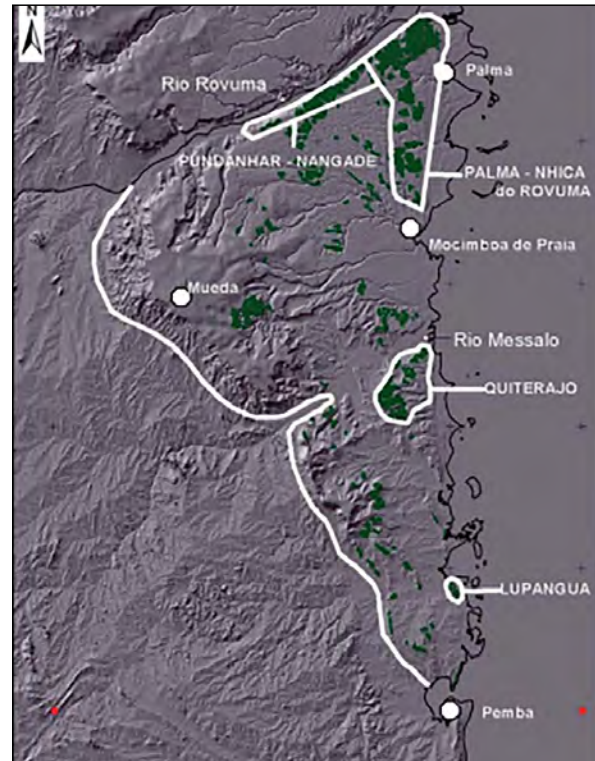
The northern coastal forest in Mozambique corresponds to the Swahili Regional Center of Endemism while the southern coastal forests correspond to the Regional Transition zone of Swahili-Maputaland, and, south of Maputo, the Maputaland-Tongaland Center of Endemism.

Within the Swahili Regional Center of Endemism, along Mozambique's North Coast, the forests of Cabo Delgado are recognized to have somewhat different vegetation from other parts of northern Mozambique¹⁷. Each forest patch is often unique due to wide variation and species composition between the patches and the number of species present with very restricted distributions. Since 2003, 68 species new to Mozambique have been recorded from Cabo Delgado in addition to 36 possible new species.¹⁸

Most of these forest patches have no legal protection and so these remaining forest patches are under considerable pressure. They are believed to represent a mere 20% of the original forest area as of 100 to 150 years ago. Timberlake et al. (2011) suggest a landscape level conservation approach along the Rovuma escarpment, with site level approaches for example near Quiterajo just south of the Messalo River (see map above).

In theory, all remaining undisturbed Swahili coastal forest patches deserve to be "No Go" areas. In practice this may not be of much help in conserving them, as it is not business or investment that forms the major threat to these, it is the advance of shifting cultivation into new areas. The recommendation here is to use the new categories available within the new Conservation Law (16/2014), particularly private sector or community managed areas (to reduce costs to an already

FIGURE 4. Swahili Coastal Forest Patches of High Conservation Value in Northern Mozambique



Note: With the exception of the lowest one, marked Lupangua (which is inside the Quirimbas National Park, area 20 km² and 30 km² of the very northernmost forest patch north of Palma (which lies within a privately-owned game farm) these critical habitats are unprotected.

Source: Timberlake et al. (2011). Coastal dry forests in northern Mozambique. *Plant Ecology and Evolution* 144 (2): 126–137. p. 129.

overburdened ANAC), to extend protection to these undisturbed forest patches and transform them into formally protected areas. Ideally, a broader landscape level biodiversity management scheme as suggested by Timberlake et al. (2011) would accompany this to allow for connectivity throughout the landscape. The actual work of conserving these areas however lies outside the scope of this roadmap, though it is related.

Additional gaps in protection lie within the Montane Grassland and Shrubland eco-region, and these are the areas of the Monte Namuli and Monte Mabu Massifs in north-central Mozambique (though these areas contain rainforest as well). While the Chimanmani Reserve specifically protects mountain habitats, the Monte Namuli and Monte Mabu Massifs host many endemic species and thus deserve protection in their own right, which has not

¹⁷ Timberlake et al. (2011). Coastal dry forests in northern Mozambique. *Plant Ecology and Evolution* 144 (2): 126–137. p. 127.

¹⁸ *Ibid.* p 127.

yet been extended. Any areas of pristine or near pristine vegetation in these areas should be “No Go”, with vegetation in any state of conservation being critical habitat. The major threat to these areas is, once again, smallholder agriculture.

Aquatic Ecosystems and Wetlands

Mozambique’s aquatic ecosystems and wetlands are critical for biodiversity conservation purposes. Perhaps the two most important are the Zambezi Delta in the center of the country and Lake Niassa in the Northwest. Both of these contain large protected areas and have both been declared RAMSAR sites.¹⁹ The southern coastal Lake systems are also important with several lakes being included in the Maputo Special Reserve. The coastal wetlands of northern Zambezia and southern Nampula have been included in the newly declared Marine Protected Area of the Primeiras and Segundas Archipelago.

At a national scale, riverbanks and wetlands play important roles in regulation of annual river flows and control of seasonal flooding, in addition to their biodiversity and habitat values.

Marine and Coastal Ecosystems

These two ecosystems occupy an area of about 42% of the country and include coastal dunes that extend from Bazaruto South to Ponta do Ouro, kilometers to the south. These coastal dunes contain a variety of endemic species and there may be a gap in protected area coverage that needs to be filled in this region. The Pomene Reserve, designed to cover some of this vegetation, has largely been degraded. The Maputo Special Reserve does contain much of this habitat; what remains is to ascertain the degree of similarity between that which is protected and that which remains outside protected areas. Vegetated coastal dunes anywhere in the country, due to the presence of endemics and their role in coastal protection, should always be considered at least critical habitat, with pristine or near pristine areas being “no-go”. Do note that this categorization is above and beyond existing levels of protection provided



Mozambique’s wetlands are critical for biodiversity conservation: a Waterbuck (*Kobus ellipsiprymnus*) in Gorongosa National Park.

by the current legal framework (in most areas for example it is prohibited to build within 100 m of the high tide mark, although it is possible to obtain waivers to this regulation).

The most important marine habitats are well represented within protected areas, including the seagrass beds and coral of the northern coast, of the Ilhas Primeiras and Segundas, and of the Bazaruto archipelago. What is not known is whether species associated with these habitats are equally well represented.

Seagrass ecosystems are estimated to cover 439 km² in Mozambique.²⁰ Due to this limited range, their importance for reproduction of marine species, the fact that they are one of the most productive habitats on earth, and the fact that they are notoriously hard to restore, seagrass beds in any state of conservation should always be categorized at least as critical habitat, with well-conserved beds being “No Go” areas.

Coral reef coverage is estimated as 1890 km².²¹ Hard corals are distributed almost continuously along the northern coast from the Rovuma River to Zambezia. From the Bazaruto archipelago south to the border with South Africa soft corals

¹⁹ Resolução 45/2003 de 05 de Novembro (Marromeu) and Decreto 59/2011 (Lake Niassa).

²⁰ Ibid, p. 33, after Bandeira and Gell, 2003.

²¹ Ibid, p. 33, after Spalding et al., 2001. .

dominate. Although corals can recover strongly when stressors are removed, due to their very high productivity and the dramatic worldwide decline in coral coverage, corals in any state of conservation should always be categorized at least as critical habitat, with corals in a good state of conservation being categorized as “no-go”.

A gap exists in marine protected areas from Zavora to Pomene and centered on Tofo. This gap is due to species considerations: it may be the only area in the world where both whale sharks and manta rays aggregate in coastal waters year-round.

Although mangrove coverage in general decreased in the years 1972 to 2007 from an estimated 408,000 ha to 357,000 ha, certain areas such as the Zambezi Delta actually show an increase in mangrove coverage in recent years, according to early results of the joint USAID, U.S. Forest Service, and WWF “Total Carbon Estimation in African Mangroves and Coastal Wetlands in Preparation for REDD and Blue Carbon Credits” project.²² Due to their role in coastal protection and their importance in the reproduction of many marine species, mangroves should always be categorized at least as critical habitat.

Overall Assessment

It does seem that with respect to ecosystems and habitats, the Fifth National Report on the Implementation of the Convention on Biological Diversity in Mozambique is justified in claiming full compliance with Strategic Goal C, Target 11, having achieved, among other things, “a network of protected areas representative of different ecosystems in the country”.²³

There are a few provisos however.

1. The Swahili Coastal Forest in Cabo Delgado Province is poorly protected. Though a small undisturbed patch of this forest lies inside the Quirimbas National Park, and a larger piece falls within the Namoto Safaris Game Farm, these cannot be considered representative as,

by their nature, Cabo Delgado’s Swahili Coastal Forest patches are each unique in terms of species composition and diversity, and thus the concept of representativeness is not readily applicable. All remaining undisturbed Swahili coastal forest patches deserve to be “No Go” areas, protected as suggested earlier, with lightly disturbed areas considered as critical habitat (“lightly disturbed” being defined not by forest density or stage of re-growth, but rather by the presence of known indicator species—see discussion on miombo below).

2. The unique biodiversity of Monte Namuli/ Monte Mabu is also unprotected; once again, major threats here come from smallholder agriculture. It is recommended to use categories available in the new conservation law to protect these areas. Landscape level management is perhaps less important as these are and have always been singular biodiversity hotspots based on the unique geographical characteristics of these mountain massifs. Any areas of pristine or near pristine vegetation in these areas should be “No Go”, with vegetation in any state of conservation being critical habitat.
3. No protection is offered anywhere within Mozambique to the unique whale shark/ manta ray aggregation zone between Zavora and Pomene. The major threats here are not all clear; however, it is clear that there has been a significant decline in the frequency of sighting of these two species.²⁴ Whether these species are abandoning the area or have simply moved to occupy nearby areas out of reach of the current dive shops is not entirely clear. Commercial trawling does not occur along this stretch of coastline, so a Marine Protected Area with a focus on management of tourism and fishing impacts, protection of these flagship species, and commercial longline fishing may be the way forward here.
4. Representativeness has so far been discussed largely in terms of habitats. Available

²² http://carbon.nasa.gov/cgi-bin/cms/inv_pgp.pl?pgid=3132&format=1

²³ Ministry for the Coordination of Environmental Affairs (2014). Fifth National Report on the Implementation of Convention on Biological Diversity in Mozambique. Maputo. MICOA. p. 125.

²⁴ C. A. Rohner, S. J. Pierce, A. D. Marshall, S. J. Weeks, M. B. Bennett, A. J. Richardson. Trends in sightings and environmental influences on a coastal aggregation of manta rays and whale sharks. *Marine Ecology Progress Series*. Vol. 482: 153–168, 2013

information about species varies widely. Many terrestrial species of national or international conservation concern have been reasonably well-studied; often smaller, more secretive, and/or endemic species have not. Thus, incoming projects may be able to use existing databases and/or maps to form some idea of the biodiversity characteristics of the habitats they will affect, but species information may only be available through primary investigation.

5. Little investigation has gone into ecosystem services in Mozambique. Ecosystem services are however provided by the ecosystem to specific groups of people, in specific places, and therefore the IFC Performance Standards do not generally require offsetting for ecosystem services. This is because offsetting would result in delivery of equivalent services in a different place, to (presumably) different groups of stakeholders, and thus would not serve the purpose for which offsetting is intended. Changes in ecosystem service delivery resulting from project implementation are generally handled by the IFC through stakeholder engagement and consist of substitution or compensation (including financial compensation) for loss of services delivered. However, there are services that are delivered at a regional, national, or worldwide scale, such as is the case for carbon sequestration, prawn reproduction to maintain or restore stocks on the Sofala Bank, or capture and infiltration of rainfall in mountainous or upstream areas for the provision of water supply and/or regulation of flooding in areas downstream. The scale of such service delivery may mean that the original stakeholders would benefit from services delivered by the offset. The recommendation for no net loss/ offsetting in Mozambique is that services delivered at regional, national, or larger scales should be offset when residual impacts and a relevant offset site are found.
6. Mozambican law allows for some kinds of activity in some categories of conservation area that may be in conflict with offsetting, a summary of which follows:
 - a. In National Parks and “*Reservas Naturais Integrais*” (which may be roughly translated as “totally protected nature reserves” which can either stand alone or be used as a zoning tool inside other kinds of protected area), no extractive activities are permitted²⁵, so there would be no conflict with the installation of offsets in these areas;
 - b. Natural and Cultural Monuments are areas of natural or cultural uniqueness less than 100 ha in size, which in general are dedicated to total protection of the resource in question, but do allow extractive activities according to the traditional uses of the area (an example might be a sacred forest which traditionally does allow for some extractive use of medicinal plants for example).²⁶ Depending on the nature of the offset and the nature of the monument, there may or may not be conflicts with the offset being proposed.
 - c. All other protected area categories allow for some degree of sustainable use:
 - i. In Special Reserves, Areas of Environmental Protection, Official Hunting Reserves, Sanctuaries, and Game Farms, extractive activities may be allowed if authorized by the approved management planning documents, which in some cases may create conflicts with certain types of offset.²⁷ To resolve these, offsets planned for these areas should either: A) make sure the management plans are not in conflict with the offset or alter them and get government approval for the alteration, and/or B) upgrade the area of the offset to be a Reserva Natural Integral within the broader protected area. Option A is quicker and easier, option B has a greater degree of permanence, so perhaps the most secure tactic is to begin with option A and proceed with option B over time. Option B produces synergies for conservation as well, in that selected

²⁵ Conservation Law no. 16/2014, Articles 14–16.

²⁶ Ibid., Article 17.

²⁷ Ibid, Articles 18, 19, 20, 21, 23, 24.

areas of critical biodiversity will have permanent upgrading to their levels of protection over time. For those areas under private management, there is an option C, a legally binding contract to implement the offset. It is unclear at this point as to whether option B adds any permanence to privately managed conservation areas. It may be that a harmonized management plan and a legal contract will provide an equal degree of protection as the declaration of a *Reserva Natural Integral*. Clarity on this will be needed going forwards.

- ii. In Community Conservation Areas, extractive activities can only be permitted with the agreement of the local communities, arrived at through public consultation, and following the signing of a legal partnership contract.²⁸ In the case of offsetting, the suggested mechanism would be for the project requiring an offset to follow this procedure and sign a legal contract for the offset to be undertaken within the community conservation area in question. Just as for privately managed game farms and sanctuaries, it may be that the declaration of a *Reserva Natural Integral* will not provide any additional degree of protection in these areas.
- iii. In Municipal Ecological Parks, management is generally effected by the municipality, and the new Conservation Law as written is not explicit about activities that may or may not be engaged in, simply noting that human presence is allowed within these areas.²⁹

ANALYSIS

The existing protected area network (protected areas as defined in Mozambican law) can accommodate offsetting for most Mozambican biodiversity. The exceptions have been noted above. When

these exceptions form part of the biodiversity impacted, the recommendation is to attempt to create privately managed or community managed protected areas to offset the biodiversity in question. Mozambique has invested heavily in the expansion of its protected areas network in recent years and there is little political appetite for new public protected areas without stabilization of both the management and the finances of existing ones. The use of privately managed or community managed models spreads co-management responsibility and financial responsibility. Operationally, offset developers should be required to offset into the existing protected areas network (including both publically and privately managed areas), or provide convincing scientific evidence why the existing network is not suitable and suggest an alternative. The offsetting proposal in this case must include technical and financial resources sufficient to create and manage the new protected area proposed, including not only costs of declaration and ongoing conservation area management but stakeholder engagement costs as well.³⁰

THE PROTECTED AREA NETWORK AND NO NET LOSS

Mozambican PAs in general lack the staff, equipment, and budgets necessary for adequate conservation on the ground. The National Administration of Conservation Areas (ANAC) Financial Plan analyses³¹ show that the Mozambican protected area network currently receives just 19% of its current funding from sustainable sources. At the same time, even that current funding level is still far below that needed to provide for an adequate but “no frills” levels of protection, focused only on prevention of biodiversity loss. Recent estimates show that to bring all the publicly managed

²⁸ Ibid, Article 22.

²⁹ Ibid, Article 25.

³⁰ Article 37 of the new conservation law (6/2014) establishes the competencies for declaration of new protected areas. In general, higher levels of protection and larger areas require higher levels of authority to declare them. Provincial governors for example can establish new Sanctuaries or Game Farms up to 1000 ha, the Minister of Environment may establish these from 1000 to 10,000 ha, and anything bigger than 10,000 ha must be established by the full Council of Ministers. National Parks and Reservas Naturais Integrais are established at the Council of Ministers level, regardless of size.

³¹ Nazerali S. et al. 2015. Plano Financeiro para o Sistema de Áreas de Conservação em Moçambique. Preparado pelo Verde Azul para ANAC com apoio do PNUD.

FIGURE 5. Current Operational Spending of Mozambican Parks and Reserves

	Current Operating Spending (MT/km ²)	Level of Development	Additional Annual operating Expenses needed to improve by one level*
National Parks			
Magoe	0	“Paper Park”	10,675,560
Banhine	478	Incipient	83,535,847
Zinave	1.803	Basic	40,786,851
Quirimbas	4.439	Basic	70,696,076
Limpopo	3.431	Medium	146,595,377
Arquipélago de Bazaruto	8.364	Medium	16,639,345
Gorongosa	26.969	Optimal	—
Reserves			
Malhazine	0	“Paper Park”	?
Ilhas Primeiras e Segundas	432	Incipient	26,727,900
Chimanimani	7.259	Basic	3,105,238
Reserva Especial de Marromeu	1.007	Basic	16,489,838
Niassa	4.982	Basic	358,076,484
Gilé	6.217	Medium	25,653,070
Ponta do Ouro	7.945	Medium	6,252,109
Reserva Especial de Maputo	7.440	Medium	9,291,674
Lago Niassa	12.450	Medium	—
Pomene	70.707	Medium	—
Total			814,525,369

Note: * Values derived from ANAC Financial Plan’s “Levels of Consolidation tool”. 2015, ANAC. Note that the tool is not very accurate for very small and very large PAs, but is designed to see the impact at a systemic level.

protected areas up to an optimal level of management, where biodiversity was being not only effectively protected but also increasing, would require an injection of a one off investment of approximately 120 million USD, and then annual operational funding of approximately 70 million USD, compared with just 19M per year being spent currently.³² Increases in funding would result in “additionality” in the form of substantially improved on-the-ground management of existing “paper parks”, allowing them to progressively reach and finally move beyond the goal of simple maintenance of existing biodiversity. The case of the Gorongosa National Park is illuminating in this context. Although reduced during the war to the same level of protection as the rest of the PA network, Gorongosa managed to find a wealthy private sponsor who has invested between 2–6 million USD per year in the park. With adequate funding for conservation, over the course of

10 years observed wildlife numbers have increased dramatically, more than tenfold for example in the cases of waterbuck, warthog, and reedbuck.³³ Use of the protected area network would be, for the individual project promoter, more straightforward and less time-consuming than the legal establishment of new protected areas, and has the advantage of aggregating offsets in already-determined areas with high biodiversity value.

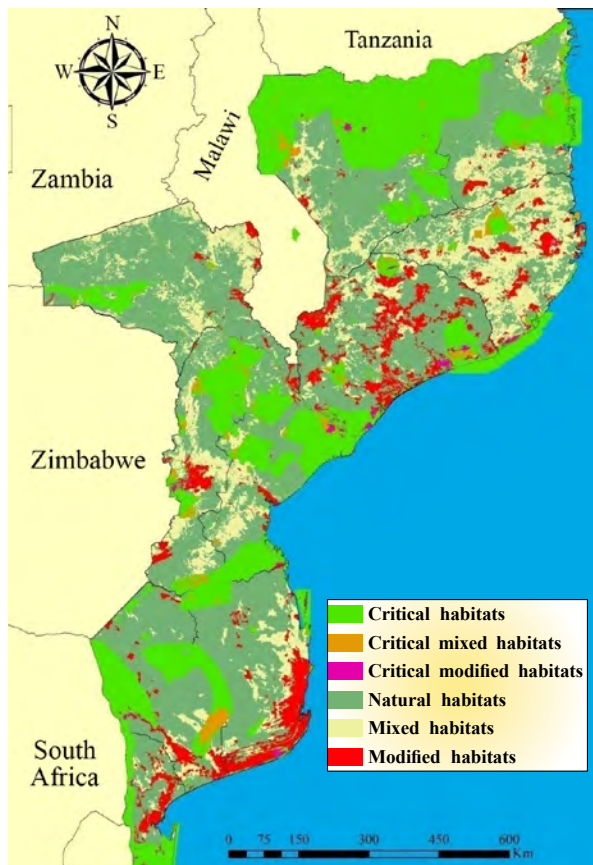
ANAC, created in 2011, is responsible for the planning and management of the system of protected areas in Mozambique. ANAC is a parastatal organization under the ministry responsible for Conservation Areas³⁴, and is directly responsible for the establishment and management of National Parks, National Reserves and *Coutadas* (official hunting reserves which are concessioned to private operators). *Fazendas de Fauna Bravia* (private

³² Ibid.

³³ Stahlmans, Marc. GNP Wildlife Count 2012.

³⁴ Up until 2015, this was the Ministry of Tourism. However, under the recent Government reorganization, from 2015 forward this will be the Ministry of Environment, Land, and Rural Development.

FIGURE 6. BIOFUND Map—Natural and Critical Habitats in Mozambique



Source: Siteo, A. et al. 2015. Mapeamento de Habitats de Moçambique. CEAGRE—Centro de Estudos de Agricultura e Recursos Naturais da Faculdade de Agronomia e Engenharia Florestal da Universidade Eduardo Mondlane. Available at <http://www.biofund.org.mz/habitats/>

game farms) are also in the process of being brought under its remit. The primary mandate of ANAC for these categories of protected areas is focused on conservation and nature-based tourism promotion and development, with involvement from the private sector.

Although the protected area network contains a significant amount of biodiversity, there are still several problems with it in the context of demonstrating No Net Loss. First, the available biodiversity data rarely if ever quantifies habitat information. This can in some cases be re-constructed, where the original mapping has taken place in a GIS compatible manner and the original raw data files are available. Second, data that are produced by the various stakeholders (NGOs, ANAC, the Ministry of Agriculture, the Department

of Lands and Forests, the different universities, as well as internationally based stakeholders) are often not organized or even saved in any systematic way. No national database exists and as a result, even information that is generated can be lost. Species data are generally better quantified, at least for the commercially interesting and more easily counted species of larger game.³⁵ However, these data can sometimes be seen as confidential business information by game farm owners, who are then not willing to share it. One benefit of implementing an aggregated offsetting program in Mozambique would be that those operators interested in benefiting from offsetting finance would be more willing to share their data.

In the context of preparing the country for No Net Loss and biodiversity offsets, the Foundation for the Conservation of Biodiversity (BIOFUND) is currently attempting to map the country's habitat types within a geo-referenced online database, as well as attempting to classify them as modified, natural, and critical habitats at national scale to help guide investment decisions. See the map to the left.

There are however some problems to be overcome. One example of the problems encountered is the attempt to classify the aforementioned Swahili Coastal Forest of Cabo Delgado Province. Landscape level resolution does not capture the nuances of the mosaic nature of this forest, leading to difficulties in identifying modified and natural areas. Due to high levels of biodiversity and high levels of threat, any reasonably intact stretch of this forest which still contains indicator/characteristic species should be considered critical habitat. A mapping exercise cannot of course capture which species are present on the ground.

Miombo also presents problems. As for Coastal forest, it also occurs in a mosaic with other types of habitat. It also is a type of woodland that is based on a disturbance regime and regenerates quite vigorously after such disturbances. The distinction between a miombo that looks “natural” and a miombo that looks “modified” is thus often not a question of geography but simply timing.

³⁵ The privately run hunting areas collect regular data on the commercial species. Aerial counts have been carried out in some areas, most recently across the north of the country in 2013 by WCS and WWF.

Given that miombo and East African Coastal Forest are both considered to be high biodiversity value habitats, and together they cover more than 70% of Mozambique's terrestrial surface, the fact that landscape level resolution does not pick up the essential nuances may mean that this mapping exercise will be of limited value in alerting project developers to the presence or absence of natural or critical habitat in their proposed project areas. For all intents and purposes, most projects will go into areas of potentially high biodiversity value, and definitive natural and critical and modified habitat classifications can only be made following investigation on the ground.

A discussion is needed within the scientific community and the Ministry of the Environment that centers on the categorization of miombo into "natural" or "modified". A part of this discussion has been outlined above, but there are additional factors in play. While it is true that miombo regenerates quickly, continuous disturbance such as repeated slash and burn farming will prevent any such regeneration. The real difference between natural and modified miombo is probably best understood as the amount (degree and periodicity) of the disturbance any particular piece of miombo is going to receive in the future, not the amount of disturbance that it has received in the past. This means for example that projects installed in miombo areas which are likely to suffer sustained pressure from smallholder (slash and burn) agriculture during the lifetime of the project should probably be considered modified habitats, while those that take place in areas which will receive intermittent or lower levels of pressure should probably be considered as natural. A clear policy statement on this by the Ministry responsible for EIA, as well as some indicators based on future threat modeling methodologies, would be of great help for project developers. It is certainly possible using currently available development and demographic tools (census data, historical Google Earth imagery, government development plans, plans for expansion of the road network, threat scenario analysis, etc.) to construct plausible future threat scenarios for any given area of miombo.

It is also important to remember in this discussion, that East African Coastal Forest does

not regenerate well after disturbance, particularly following slash and burn agriculture. In its natural state, East African Coastal Forest is not subject to wildfires; it is so dense that no combustible understory grows underneath. However, following disturbance, grasses will grow and if fire is allowed into the area, repeated burns will eventually remove seedlings and seed stock of fire intolerant species from the site (these are the characteristic and indicator species), leaving only the fire tolerant ones. As long as disturbance is short enough to allow fire intolerant species to regrow, the forest can recover. Under sustained pressure and especially burning following clearing for slash and burn agriculture, East African Coastal Forest degrades into various types of fire tolerant woodland with grass understory, often miombo.

The BIOFUND map, even though it is indicative, not definitive, will however be a useful first level approximation of some "No Go" areas and critical habitats already identified. This is of course of insufficient resolution and can in no way substitute for detailed on-site investigation. However, it may help project developers to avoid more obvious superpositions with higher biodiversity value forests, woodlands, wetlands, protected areas, etc.

Conservation Trust Fund or Similar Mechanism for Managing Funds

One of the key lessons learned from international best practice surrounding offsets is the need to identify a well-governed conservation trust fund or similar mechanism for receiving funds from projects to be offset, managing them, and disbursing to the offset sites. Essentially, this means that there is a need for a funding mechanism that can:

1. Legally receive funds from the private sector;
2. Provide monitoring and reporting back to the private sector at a suitable level for accountability and transparency purposes;
3. Legally distribute funds to conservation activities in-country;

4. Ensure that funds received will be distributed to specific activities as determined by the offset design process;
5. Manage the long-term distribution of funds, even if received in large quantities up-front, enhancing the permanence of the offset;
6. Guarantee that funds allocated will not be diverted from their original purpose; and
7. Reallocate to other implementing partners or conservation areas as necessary, based on evaluation of on-site offset performance.

In order to be able to receive substantial funds and distribute them over a long period of time, the conservation funding mechanism needs to be able to maintain the value of the funds received, as well as being independent of both corporations and the state. For these reasons, this role is generally played by a non-profit entity such as a conservation trust fund (CTF). CTFs are “private, legally independent grant-making institutions that provide sustainable financing for biodiversity conservation and often finance part of the long-term management costs of a country’s protected area (PA) system [...] CTFs raise and invest funds to make grants to non-governmental organizations (NGOs), community based-organizations (CBOs) and governmental agencies (such as national parks agencies). CTFs are financing mechanisms rather than implementing agencies.”³⁶

CTFs are specifically mentioned in the BBOP Standards, the Guidance Notes to IFC PS³⁷, and other reference materials, as appropriate financial mechanisms for guaranteeing offset implementation over the long term. Fortunately, Mozambique has an existing CTF that satisfies international standards, known as the BIOFUND, the Foundation for the Conservation of Biodiversity. BIOFUND was created in 2011 as an independent private not-for-profit entity, and was granted public benefit status in March 2012. The BIOFUND does include government participation: one place on the Board of Directors is reserved for

a representative of the Ministry of Tourism, and approximately one-third of the members are either government officials or representatives of public institutions. Nonetheless, BIOFUND is firmly independent, with its statutes clearly capping government representation on the Board of Directors at a maximum of 25 percent.³⁸ With support and oversight from the World Bank, KfW, UNDP and AFD, corporate entities can be assured that the BIOFUND will continue to uphold international standards.

The Mission of BIOFUND is to support the conservation of aquatic and terrestrial biodiversity and the sustainable use of natural resources, including the consolidation of the national system of Conservation Areas. BIOFUND may also contribute to financing conservation activities outside of Conservation Areas, based on the priorities defined and identified in its Strategic Plan. That Strategic Plan identifies three main objectives for the next five years: i) To make BIOFUND an effective and efficient institution in financing conservation of biodiversity in Mozambique; ii) To contribute decisively so that the national parks and reserves in Mozambique are adequately financed; and iii) To promote greater awareness about the importance of biodiversity. To date the Foundation has secured some USD \$22 Million for its endowment fund.³⁹

The BIOFUND seems to be well-placed to fulfill all the essential criteria for a well-governed, independent trust fund that can receive, manage, and disburse funds for offsets over time. At present, BIOFUND still lacks a monitoring and evaluation system that can track biodiversity outcomes, as well as final disbursement procedures. Both of these are currently under development. It is expected that BIOFUND will make its initial disbursements to PAs in 2016, and be supporting up to 8 PAs by 2020.

Having briefly examined the state of affairs for these four major building blocks, the Roadmap will next focus on how a national system for biodiversity offsets could work in Mozambique and what would be needed to ensure that this occurs.

³⁶ Conservation Finance Alliance (CFA). 2008. Rapid Review of Conservation Trust Funds. Prepared for the CFA Working Group on Environmental Funds by Barry Spergel and Philippe Taieb.

³⁷ GN33 under Guidance Note 6.

³⁸ Articles of Incorporation as amended by the General Assembly 2014, Article 26 (5).

³⁹ As of May 2016. Source. BIOFUND.

No Net Loss—A Road Map for Mozambique

In order to have an effective and useful system to facilitate No Net Loss projects in Mozambique, it will be necessary to carry out a series of activities and assist in making a number of key decisions. The key steps can be grouped into five main areas as follows:

1. Getting the legal framework in place;
2. Determining the most suitable geographic locations for offsets;
3. Developing the implementation mechanisms for an aggregate offset system through the support of pilot projects;
4. Adapting and improving; and
5. Learning and training.

Within each of these areas there are a number of analyses and activities to be carried out and key decisions to be made.

Getting the Legal Framework in Place

The legal framework sets the stage and the context for No Net Loss initiatives in the country. Correctly done, this will create the conditions for international best practice to be carried out in Mozambique, while recognizing the limitations in capacity that exist.

There are risks associated with inadequate legislation. An inadequate law could be detrimental to the country if it required lower standards than could realistically be achieved; it could also be detrimental to extractive companies who need to prove that they are in compliance with current international standards such as PS6. If the Mozambican national compliance standard would differ substantially from PS6, the current

offsetting “gold standard”, Mozambique would be creating an additional regulatory burden for both the state and the companies involved. If on the contrary, requirements were very similar, both compliance and monitoring of that compliance become easier for all parties concerned.

Following these are the risks associated with implementation. With the current weaknesses of the regulatory bodies in terms of staff numbers, technical skills, and budget, it would be difficult to ensure that offsets are truly taking place and truly benefiting biodiversity at the right scale. The risk is a situation in which paper compliance would substitute for real No Net Loss initiatives.

On the other hand, it is important to remember that national legislation is binding on all project developers, not only those who have an obligation to comply with financial institution requirements. Creating guidelines that are mandatory for all projects helps to level the playing field and ensure that all developers are equally required to protect the country’s biodiversity. During public consultations on this roadmap in January 2015, all private sector representatives present endorsed the idea of “leveling the playing field” by requiring No Net Loss for all project developers, not just those seeking finance from institutions that require it. Thus both environmentalists and companies supported the idea of national legislation.

Accordingly, this Roadmap recommends not only that the general principles of biodiversity offsets should be placed within national legislation, as mentioned in the National Biodiversity Strategy, but also that specific legislative instruments (laws, regulations, policies, etc.) requiring no net loss be enacted as soon as possible. This roadmap recognizes however that it will be important to enable the development of sufficient capacity within the regulatory bodies to demand adequate compliance

and monitor the implementation of no net loss and biodiversity offsets effectively, and therefore suggests the full range of activities described earlier.

EIA LEGISLATION

Although the current environmental impact assessment process in Mozambique is generally adequate, it has a number of shortcomings when considered from a No Net Loss perspective:

1. Current EIAs rarely quantify the expected adverse environmental impacts from projects, including the residual impacts;
2. They often omit the induced or indirect impacts;
3. Ecosystem services are rarely discussed;
4. There is generally no effective way to adjust the Environmental Management Plan (a portion of the EIA) appropriately over time to adapt to actual impacts as opposed to predicted ones;
5. The approval process to date has not demanded compliance with Article 4 of the Environmental Law regarding responsibility;⁴⁰
6. Lastly, and crucially in guaranteeing EIA quality, there is no mechanism for systematic independent expert review of EIAs produced.⁴¹

Mozambique's EIA process can be altered to overcome the above-mentioned deficiencies, constructing within it a compliance No Net Loss framework that would satisfy existing international standards, including IFC PS6. The specific opportunity and moment for this is the currently ongoing review of Mozambique's EIA regulations; the principles of No Net Loss and biodiversity offsets and the obligation and mechanisms to implement them are being incorporated within this review.⁴²

⁴⁰ Article 4, Principle 7 of this law states, '...whoever pollutes or in any way degrades the environment shall always have the obligation to repair or compensate for the resulting damage.'

⁴¹ Note that EIAs are subject to obligatory public consultation, and that in the approval process there are provisions for calling in outside experts if MICOA so desires. However, this is far from systematic, and as the outside opinions are not made publically available, this cannot be considered an adequate independent expert review.

⁴² New draft regulations are currently being prepared by DNAIA, the National Directorate for Environmental Impact Evaluation, with the support of the author and other members of civil society. Once drafted, they will be debated both within government and hopefully publicly before approval.

What follows is a discussion of the existing regulations and the changes that are being incorporated into the present draft to integrate No Net Loss and offsetting.

The first step in an EIA in Mozambique involves categorization of projects into different categories (with different requirements for EIA rigor) on the basis of preliminary screening information submitted. This information includes biodiversity values of the proposed area as well as project-specific information. Under the new legislation, there are four categories, A+, A, B, and C. Category C is used for projects for which there are no expected significant impacts, and the confidence of this is such that no EIA is required, though the new draft proposes the need for a simplified Environmental Management Plan (EMP) in some cases. These are often very small projects done in municipal areas, such as family-owned restaurants. Outside of municipal areas, there is a detailed list of habitats that category C projects cannot be located in. These include high biodiversity value areas, natural or critical habitats, and areas subject to natural disasters or erosion, among others. An example of a category C project outside of a municipal area would be an irrigation scheme smaller than 100 ha and that is not located in one of the habitats on the previously mentioned list.

Category B projects are those that have no expected significant impacts, but still a simplified EIA and an Environmental Management Plan are both required. This category is applied to larger projects that occur within municipalities, such as hotels, or medium-sized projects that occur outside of municipalities, again not in the areas previously listed. Included here might be such things as bakeries, carpentry shops/ furniture factories, or animal feedlots with a capacity of below 1500 animals per year. Category A projects are everything else; projects with significant impacts, projects which occur in one of the previously listed habitats, and projects of larger dimension outside of municipal areas. Category A projects are generally large-scale ones, although smaller projects in more sensitive areas also fall into this category.

The new regulations have brought two new elements. First is the creation of a category A+ which demands a higher level of rigor for the EIA,

for those projects that would otherwise be category A but are in particularly sensitive areas or are activities prone to potentially severe impacts such as pesticide factories. The second is the concept of peer review, which will now be obligatory for A+ projects. The new regulations are not entirely clear on how this review process will function and it is likely that additional guidance will need to be elaborated to ensure compliance with best practices.

Crafting the terms of reference (TORs) for the Environmental Impact Assessment Study is the next step. These are developed on the basis of a preliminary (generally desktop) scoping study (the *Estudo de Pré-viabilidade Ambiental*, or EPDA). Under the Mozambican process, these TORs are proposed as part of the EPDA by the project developer to the Ministry of Land, the Environment, and Rural Development⁴³ who will then either approve them or call for improvements and re-submission. The EIA is then carried out according to the approved TORs, with the mitigation hierarchy respected.

Despite considerable discussion on the possible inclusion of no net loss provisions in the 2015 revisions of the general environmental regulations, following stakeholder consultation and discussion it was decided by the government of Mozambique to refer this matter to specific legislation due to its complexity and innovative nature. Additionally, this was due to the fact that the 2015 revision specifically excluded the mining and petroleum sectors, which are both the most likely and the most needed sectors for offsets.

Determining the Most Suitable Geographic Locations for Offsets

Under international best practice, residual biodiversity losses need to be offset by preventing

an (otherwise likely) loss, restoring, or enhancing the same kind of biodiversity in a different location. This is known as the like-for-like principle. Locating the appropriate location for an offset is therefore of critical importance. In order to enhance permanence, it is important to ensure any selected offset site becomes a legally protected area, on the ground as well as on paper. This will help to ensure that the gains to biodiversity are not reversed by some future development of the offset location.

A number of different methods have been used in different countries for choosing the appropriate geographical location for a biodiversity offset. Project developers can select on their own the location, or they can work in collaboration with other developers, consultants, NGOs, governments, or biodiversity banks where these exist. Taking into account the importance of having aggregated offsets grouped together in a planned manner, it is generally not desirable to leave the decision entirely in the hands of the private sector, as this is likely to lead to fragmented offset areas, with less successful conservation outcomes over the long term.

It is important to consider also the impacts on local people of any potential offset site, as conservation or protection measures may well have negative implications for those who are currently using those resources. This is particularly a problem in developing countries such as Mozambique, where most people are directly dependent on subsistence use of natural resources.

The options available for project developers in Mozambique are either i) to establish a new protected area, on their own or in collaboration with either the Government or nongovernmental partners, or ii) to strengthen protected areas that have already been legally established “on paper” but lack the resources for effective on-the-ground protection and management. For the reasons indicated below, this Roadmap recommends following the latter course of action in most cases, exceptions already having been noted in a previous section:

1. **Reduced Transaction Costs.** The first obvious advantage of using the existing Protected Area system for biodiversity offsets in Mozambique

⁴³ In January 2015, the former Ministry for the Coordination of Environmental Affairs (MICOA) was amalgamated into the new Land, Environment, and Rural Development Ministry. All of the licensing functions previously carried out by MICOA, including the approval of EIAs, is now carried out by this Ministry. The supervision and auditing functions are however in the process of being passed to an autonomous public entity, AQUA, the National Agency for Quality Control, which is being given responsibility for supervising legal compliance of all MITADER's areas of jurisdiction (with the exception of fauna), including land, forests, and EIAs.

is that it provides an already-created network of coordinated, aggregate offset sites. In the process of Protected Area declaration, communities and other stakeholders typically are consulted and the final decision is taken by the Council of Ministers, after listening to all the different stakeholders. This means that the protected areas have significant political and stakeholder buy-in. As a result, using existing PAs will be quicker and administratively simpler to implement than biodiversity offsets in areas that have not yet been legally gazetted.

2. **Aggregation synergies.** If incoming projects are encouraged to pool their resources to support existing protected areas as their offset sites, this would by definition aggregate these offsets, firmly grounding them in a landscape approach to the zoning of restrictions, and harmonised with the best practice principles of BBOP and the IFC.
3. **Permanence.** Using the Protected Area network would enhance the long-term permanence of any planned offset. By law, Conservation Areas provide for long-term legal protection in accordance with the best-practice principles of offset design. The new Conservation Law of 2014 allows for a much wider range of protected categories for the PAs than previously existed, with differing levels and types of human activity permitted under each category, as explained earlier; it will be important in offset design to ensure that the particular biodiversity of interest is indeed placed under an appropriate level of protection.
4. **Equity.** The principle of equity, the sharing among stakeholders of the rights and responsibilities, is also more readily upheld when using the existing protected area network as a reservoir for biodiversity offsets. Within the already-gazetted Conservation Areas, community rights to the use of land and natural resources have been defined. While community relations remain an important concern for all protected areas in the country, the declaration of entirely new protected areas would likely involve greater conflicts with landholders or local communities over the rights to use land and other natural resources.
5. **Impact.** Use of the protected area network as the landscape for biodiversity offsetting also ensures a verifiable positive impact. With the possible exception of Gorongosa National Park and the São Sebatião peninsula, all Conservation Areas in the country are severely underfunded, resulting in highly under-protected biodiversity. An injection of new funds would mean in practice that additional area is being effectively protected, which could satisfy additionality requirements for offsetting. While it would not be possible to direct offset funds only to an isolated part of a conservation area, certain rehabilitation/restoration measures could well be funded for a specific habitat type within that PA, and species-specific endeavors could be funded and carried out, so that the net impact would be more closely linked to the residual impacts being offset. Success or failure in maintaining offsets should then be incorporated as part of the broader PA monitoring program.
6. **Advantages for Government.** From the perspective of the Government of Mozambique, using the PA network for offsetting has a series of advantages:
 - a. The PAs have already been identified as high biodiversity sites, protecting much of the most important biodiversity in the country;
 - b. They have already been gazetted, requiring no new initiatives from Government;
 - c. There exists a defined administrative structure linking them into the national system of Conservation Areas;
 - d. ANAC and its institutional partners (donors and NGOs) often have established financial and monitoring systems which can be built upon when designing and implementing offsets. Dedicated staff and resources sometimes exist as well, though there are serious funding shortfalls as noted earlier;
 - e. The issues related to human presence within the area and community access



Subsistence agriculture is one cause of deforestation in Mozambique.

- rights to natural resources have generally already been addressed;
 - f. The PAs that would be strengthened with additional, offset-based funding would assist in fulfilling national goals and policies on environmental and biodiversity protection;
 - g. Strengthened PAs can help the Government of Mozambique to meet its international commitments as well;
 - h. This approach permits the continued growth of the economy while preserving the overall natural beauty and tourism potential of the country.
7. **Advantages for Private Sector Developers.** From the perspective of the extractive industry or other private firms, using one or more existing PAs as (an) offset site(s) also appears to be an attractive option for the following reasons:
- a. Some baseline work on biodiversity at potential offset sites has already been carried out;
 - b. PAs have already been gazetted, thus relieving the private firms of major transaction costs and uncertainty regarding whether and when legal protection will be secured;
 - c. PAs (almost always) already have management entities in place, usually with at least the basic skills and commitment for protected area management;
 - d. The financial systems of channeling funds and monitoring outcomes are relatively well established; ANAC and its institutional partners (donors and NGOs) often have established operational systems which can be built upon when designing and implementing offsets. Dedicated staff and resources sometimes exist as well, though there are serious funding shortfalls as noted earlier;
 - e. There is a significantly reduced risk that the company will face resettlement issues or other forms of stakeholder risk related to access to natural resources by local communities, due to the existence of previously negotiated agreements and frameworks.
8. **Advantages for Local Communities.** Finally, from the perspective of local communities, the advantages of using PAs as offset locations would be:
- a. The existence of negotiated frameworks to address communities' presence within the conservation areas and community access rights to the biodiversity and ecosystem services it contains. While this is an ongoing

- issue and needs considerable strengthening, it is likely to be better in the existing PAs than in areas that have not yet been gazetted;
- b. It is unlikely that additional resettlement issues would be raised;
 - c. Increased funding for Conservation Areas has the potential to improve their relations with communities already living in and around these areas as community outreach and development activities are an integral part of most PA management plans, and should be developed/ strengthened by the processes of offset design and implementation; and
 - d. Conservation Areas have already established some mechanisms for benefit sharing with local communities.

Additionality. As stated in the BBOP Design Handbook, “An offset should deliver conservation gains over and above planned or predicted conservation actions being taken by other parties (otherwise the offset is making no difference). So, it is important to check that the conservation gains planned through the activities at the offset site(s) would not have happened anyway, in the absence of the offset.”⁴⁴ In the context of already existing protected areas, no offset can be considered as additional if that area is already adequately protected.

Most Mozambican PAs lack the staff, equipment, or budget for adequate conservation on the ground. Recent studies show that “lack of financial and human resources is the main barrier for effective implementation” of the country’s PA strategy.⁴⁵ Even with the current levels of external support, the density of staff and particularly the number of law enforcement personnel employed is “far below acceptable norms to manage and patrol a conservation area.”⁴⁶ All stakeholders consulted (including government) agree on this point. Species conservation is also a concern, the most

well-known example being the recent well documented wave of elephant poaching in East Africa, which has also affected Mozambique severely.

Given this situation, it is likely that providing substantial new funding from offsets would produce significant, measurable gains for biodiversity conservation. The current funding context for Conservation Areas in Mozambique is sufficiently dire that any long-term, substantial source of funds can almost always be considered as a genuinely additional contribution.

Developing Implementation Mechanisms for an Aggregate Offset System

The next steps in creating a national No Net Loss system involve the development of specific mechanisms for implementing aggregate offsets in Mozambique. Early elements of the design would include:

1. **Identification of areas where biodiversity offsets may not be appropriate or feasible.** As per international principles surrounding biodiversity offsets, it is important to define national limits to what types of project-related damage to biodiversity can and cannot be offset. Without this guidance, a project proponent may simply choose to offset any damage done, no matter how serious. In general, the loss or degradation of areas with unique and irreplaceable biodiversity cannot be offset; such areas should be maintained in their natural state, without damage from large-scale development projects or other human influences. This roadmap has begun the discussion of a national interpretation of “No Go” limits, critical, and natural, habitats. Additional recommendations for habitat classification include:
 - a. To begin with, it should be clear that all Total Protection Areas (*Reservas Naturais Integradas* and National Parks) are off-limits, as are the Special Reserves unless specifically indicated otherwise in their Management Plans. This is Mozambican

⁴⁴ Business and Biodiversity Offsets Programme (BBOP). 2012. Biodiversity Offset Design Handbook-Updated. p.91.

⁴⁵ Action Plan for Implementing the Convention on Biological Diversity’s Programme of Work on Protected Areas. 2012.

⁴⁶ Booth, V. Summary of baseline data for conservation areas. January 2014. Consultancy Report for the Preparation of the MOZBIO Project.

law and has recently been reinforced in the 2015 EIA legislation revision;

- b. Any zones of total protection established within the zoning plans of all other conservation areas should also be off-limits;
 - c. Areas of key international importance such as UNESCO World Heritage locations should also be considered as off-limits;
 - d. The RAMSAR sites in Mozambique however, due to their larger dimensions, should be considered critical habitat, but not excluded from offsets in their entirety, though they do contain unique areas which would be considered No Go.
2. The approach to the **management of key biodiversity currently outside protected areas** needs to be considered as well. Following international best practice, in all critical habitats no project should advance unless all of the following are demonstrated:⁴⁷
- a. No other viable alternatives within the region exist for development of the project on modified or natural habitats that are not critical;
 - b. The project does not lead to measurable adverse impacts on those biodiversity values for which the critical habitat was designated, and on the ecological processes supporting those biodiversity values;
 - c. The project does not lead to a net reduction in the global and/or national/regional population of any Critically Endangered, Endangered, or range-restricted Vulnerable species⁴⁸ over a reasonable period of time; and
 - d. A robust, appropriately designed, and long-term biodiversity monitoring and evaluation program is integrated into the client's management program.
3. Ideally, an aggregate system would identify as many "No Go" areas and critical habitats as possible, as early as possible, and create consensus, appropriate policies, and

a databank open to project developers. The efforts of BIOFUND to map and categorize Mozambican habitats are both a good first step and an object lesson about what is and is not possible. Habitat mapping and data banks are useful for alerting where some types of conflict might occur, but nothing can substitute for primary investigation on the ground. Mapping in particular suffers from problems of resolution as well as the fact that conditions change over time. Mosaic habitats create problems, as does miombo's regenerative capacity. However, BIOFUND's intention to maintain both habitat maps and a database should be useful going forwards.

4. There is a question to what degree does work already done on identifying biodiversity and ecosystem services substitute for a national strategic planning process specifically for the purpose of identifying the most important biodiversity? On the one hand, it does seem that most Mozambican biodiversity is represented within the protected areas network, although there are some exceptions as noted earlier. But it is also true that much of Mozambique is under researched, not only for species, but also for ecosystem services. And it is also true that all stakeholders consulted and government wish to create a compliance aggregated biodiversity offsetting system as soon as possible. The difficulties encountered in BIOFUND's attempt to map natural and critical habitats (changes over time, problems of resolution, the problem of mosaic habitats, the complexities of miombo) probably mean that the best we could hope for from a national strategic planning process is a low-resolution snapshot of Mozambique's biodiversity frozen at a given moment in time. This roadmap suggests that the best way forward should be to begin immediately implementing what we know, but creating learning, communication, and dialogue mechanisms to make sure that we keep on learning as time goes on, all as described earlier. MITADER, BIOFUND, the NGO community, the universities, and environmental impact evaluation firms will all be important partners here. The actual mechanism to allow

⁴⁷ PS6 Paragraph 17 (slightly adapted for this Roadmap).

⁴⁸ As listed on the International Union for the Conservation of Nature (IUCN) Red List of Threatened Species.

these to input into individual EIAs and offsets design is that of peer review, described earlier in this document.

5. Related to the above, decisions about how to handle **residual impacts on ecosystem services** need to be addressed. This roadmap has also opened this discussion, suggesting that in Mozambique those ecosystem services that can be offset should be (generally ones delivered at regional, national, or larger scale), and others resolved through compensation mechanisms and stakeholder engagement.
6. Decisions about how to measure **loss and gain of biodiversity** are important. This important technical discussion has not yet been addressed in this roadmap. Without being too prescriptive, perhaps the best approach is to systematically and iteratively build upon existing and global best practice, over time allowing experience and precedent to influence the evolution of approaches to measure specific habitats and species in all of their variety. It is suggested that the IFC be a formal discussion partner in this design, so that standards for Mozambique will be as close to IFC performance standards as possible. Documentation and dialogue are two key instruments here. As a compliance aggregate offset system is developed, government and stakeholders need to create mechanisms to promote them.
7. As explained in the following sections, the project proponent will propose the size and location of the offset, which will be peer-reviewed, before going to the environmental impact authority at MITADER for review and final decisions. Possible decisions include rejection, acceptance, or recommendations for improvement and resubmission. Standards for decision-making will also need to be developed and documented, preferably in discussion with IFC, again, so that the Mozambican and IFC processes will be harmonized to the extent possible.
8. Finally, it will need to be explicit and clear to all involved that the mitigation hierarchy will first need to be followed. Only if adverse residual impacts still remain following

implementation of the mitigation hierarchy (first seek to avoid, then minimize, then restore) is offsetting appropriate.

The diagram below outlines the five different activities needed to launch an offset and key questions associated with each. This Roadmap section discusses how an aggregate offset scheme in Mozambique might work, using these five key elements as a way to structure the discussion.

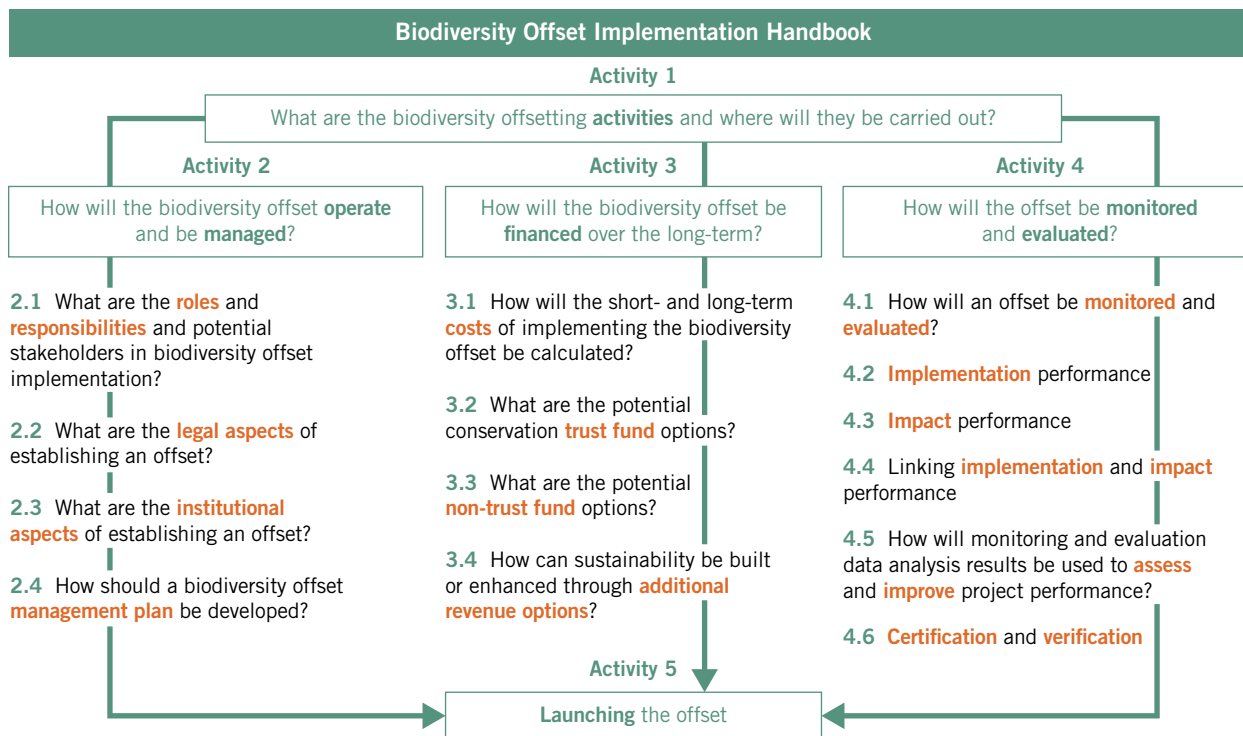
ACTIVITY 1: WHAT ARE THE BIODIVERSITY OFFSETTING ACTIVITIES AND WHERE WILL THEY BE CARRIED OUT?

Activity 1 in the diagram to the right refers to what activities are required and where they will be carried out. The specific activities that will be necessary to effectively conserve—and, in some cases, restore and improve—selected biodiversity will need to be determined on a case-by-case basis, but the process should include the steps outlined below.

Identification and Avoidance of “No go” Areas has been discussed earlier. Project developers will be responsible for working around known No Go areas, using for example the BIOFUND’s habitat map and existing data sources as a starting point in identifying these. EIAs should be required to make specific, substantiated, and clear statements about the presence of “No Go” areas within their project sites. Peer review of the EIA process will go some ways towards ensuring quality of decisions around “go” and “No Go”. An annual biodiversity seminar, perhaps hosted by the BIOFUND or AMAIA, bringing all stakeholders together and focusing on new EIA results and new research, could help insure that the bank of knowledge around Mozambique’s habitats and biodiversity grows every year.

It is important to remember that impacts on No Go areas may be indirect as well. An example of this has been the construction of dams along the Zambezi River. Dam construction moderated the river’s annual flood cycle, impacting negatively on prawn reproduction by reducing freshwater flow at a key moment in the life cycle, and also reducing the flooding to the Marromeu Reserve, causing it

FIGURE 7. Implementation Elements of a Biodiversity Offset



Source: Business and Biodiversity Offsets Programme (BBOP). 2012. Biodiversity Offset Design Handbook-Updated. p. 4.

to shrink in size annually and allow easier penetration of poachers into the interior swamps. It also increased risks to human settlement. This is because dam managers retain water in the early part of the rainy season to make sure that the dam will actually fill. In years with late rain, the dams get too full and water is released causing late season flooding downstream. Indirect effects of this kind could also affect “No Go” areas (and natural and critical habitat for that matter), and so indirect impacts must also be accounted for.

Following the Mitigation Hierarchy. If it is determined that a project will not affect no-go areas or otherwise cause residual damage to biodiversity that could not feasibly be offset, the next obligation for the project developer is to follow the mitigation hierarchy. Only after all appropriate measures for avoidance, minimizing, and restoration have been applied should an offset be considered to compensate for residual adverse impacts.

Determining whether Natural or Critical Habitats would be Affected. As mentioned earlier,

BIOFUND is currently undertaking an attempt to map the country’s biodiversity using available data. While the initial goal was to classify the entire country according to the IFC classifications of Modified, Natural and Critical habitats, the process demonstrated the difficulty in so doing for reasons also mentioned earlier. It has, however, produced maps highlighting some of the most important biodiversity areas in the country. Soon to be made available online, it should be seen as a kind of initial filter for both project proponents and their more distant financial backers to see how their concessions or proposed project areas overlap these zones. It will also serve to alert government and peer reviewers. This will not, however, reduce the requirement on projects working in areas outside those identified, which will still need to perform detailed EIAs, including a close local examination of potential Critical and/or Natural Habitats. The Integrated Biodiversity Assessment Tool (IBAT), a joint initiative of several organizations such as BirdLife International, IUCN and UNEP, can be used for such screening, and so

may be a good starting point for the development of national standards and tools.

Selecting the Right Offset Location. Most biodiversity offsets in Mozambique should appropriately be located within existing Conservation Areas. The project proponent should be responsible for proposing an offset site within the existing conservation area network, chosen in dialogue with ANAC (ANAC is currently overseen by MITADER, so the whole process remains within one Ministry). In those cases where the specific biodiversity impacted might not be adequately (or at all) represented within the existing PA network, the project proponent first must make the case that this is actually so within the EIA and Biodiversity Offset Management Plan, and then propose an alternative site. The site selected must be approved by MITADER as well as peer reviewers.

Compensating for Ecosystem Services. The varied habitats which support Mozambique's rich biodiversity also provide numerous ecosystem services to adjacent and downstream human populations; many of the Conservation Area sites to be selected for biodiversity offsets will also be a source of important ecosystem services. However, biodiversity offsets are not always an effective tool to replace or compensate for ecosystem services that might be lost or reduced due to the environmental impacts of a development project. For example, if a mining project results in the loss of a certain area of natural forest, the resulting damage to biodiversity could possibly be offset by protecting a comparable forest ecosystem elsewhere (such as by effectively strengthening a specific Conservation Area). However, if this same mining project damages the water supply of a downstream town (due to water abstraction, pollution, or sedimentation following forest removal), the corresponding biodiversity offset would not necessarily maintain or restore that town's water supply. Accordingly, the potential threats to specific ecosystem services from individual development projects need to be assessed as part of the EIA process and then addressed as needed through the mitigation hierarchy and/or stakeholder engagement: avoidance, then minimization, then restoration, and finally (where residual damage would remain) some type of compensatory measure

which might be distinct from the biodiversity offset. For example, the mitigation for damaging a town's main water supply might involve the development of an alternative water source. In general however, Mozambique should seek offsetting for services delivered on regional or greater scales. Examples of this sort of service might be erosion control and water infiltration provided by forested mountainsides or carbon sequestration from wetlands.

Offset Design Quality Control. The next issue is how to determine whether any particular offset design is of acceptable quality. This roadmap and the new environmental regulations propose independent peer review by a panel of specialists to check the quality of EIA for category A+ projects, which could include the proposed biodiversity offset.⁴⁹ This peer review panel is chosen during public consultations at the scoping study phase of the EIA (EPDA) and the terms of reference for the eventual EIA, so they can comment on these preliminary documents as well. The peer review would be expected to provide an opinion as to whether the proposed offset is (i) fully compliant with Mozambican laws, regulations, and policies, and (ii) generally consistent with good international practices (such as IFC Performance Standard 6, ICMM, or the BBOP standards). Discussions about specific mechanisms are ongoing; the new EIA regulations are unclear as to how these reviewers will be chosen, but we suggest that the peer review panel be supported by a sub-contracted EIA company who will engage in an in-depth analysis of the final report. The publicly-selected panel will have the job of finalizing and submitting recommendations based on this technical analysis, to provide as much "arm's length distance" as possible between the peer reviewers and the project proponent.

At the EIA stage, the peer review panel should examine the draft final EIA report and convey a

⁴⁹ In Mozambique, the peer review process has been used previously in the oil and gas industry by the South African company Sasol. The process was highly successful, leading to considerable stakeholder satisfaction with the final EIA report, which made substantial changes to the company's original plans. For details see the *EIA for Sasol's Offshore Exploration Project in Block 16 & 19, Inhambane and Sofala Provinces, Mozambique* by ERM and Consultec. July 2006 (Annex G describes the Peer Review Process).

formal opinion based on such questions as the following:

1. Is the baseline description adequate and complete? Does it both quantify and assess quality? Does it address both the impact site and the proposed site for the offset?
2. Have the consultants identified and quantified all the potential impacts of the proposed project, including indirect and cumulative impacts? Impacts that occur off-site? Impacts on ecosystem services? Are the residual adverse impacts quantified and stratified by biodiversity type?
3. Were the methodologies used to assess the impacts and potential biodiversity gains in the offset site sufficient and appropriate? Was the mitigation hierarchy appropriately followed (first avoid, then minimize, then restore, and finally compensate for residual adverse biodiversity impacts through an offset)?
4. Are the residual adverse biodiversity impacts from the proposed development project of a kind that can feasibly be offset? In other words, is the main project area not so unique or irreplaceable from a biodiversity standpoint that it should really be treated as a no-go area?
5. Were the specialist studies (that were part of the EIA) carried out using acceptable methodologies by recognized experts?
6. Are the proposed mitigation measures sufficient, realistic, and readily implementable, with an implementation schedule, clear institutional responsibilities, adequate budget for up-front and recurrent costs, and an identified funding source?
7. Are the proposed offset measures compliant with Mozambican legal requirements as well as consistent with good international practice? Have appropriate methods and technologies been applied?
8. Does the proposed biodiversity offset deal appropriately with the issues of additionality, permanence, like-for-like (or trading-up), and community safeguards?

9. Is there a robust monitoring and evaluation framework, with objectives and results clearly stated as well as key performance indicators and clear monitoring and evaluation methodologies?

The quality control safeguards proposed for biodiversity offsetting should be fully integrated into MITADER's EIA control processes. The Biodiversity Offset Management Plan should be considered to be an Annex to the EIA, and quality control for offsetting and non-offsetting projects is identical: all A+ projects receive the same degree of scrutiny; all category A projects receive equal scrutiny; and all B and C similarly. The idea is to build offsetting quality control procedures directly into the business-as-usual operations of MITADER.

Addressing Social Impacts. Even within existing Conservation Areas, the implementation of biodiversity offsets might affect local communities, such as by further restricting access to natural resources. Just as with any other kind of field-based biodiversity conservation or protected area project, an offset needs to be designed in a manner that considers the legal rights, existing livelihoods, and preferences of local communities as well as other stakeholders. To the extent possible, the biodiversity offset should avoid or minimize any adverse social impacts upon local communities. Where the implementation of a biodiversity offset could adversely affect local livelihoods, the same offset should include support for developing viable alternative livelihoods or other measures that would assist the affected people in their efforts to restore and improve their well-being. In any special cases where local people might be required to relocate to ensure the viability of a biodiversity offset, it would be important to strictly follow all Mozambican legal requirements as well as international good practices for involuntary resettlement (such as IFC Performance Standard 5 on Land Acquisition and Involuntary Resettlement).

ACTIVITY 2: HOW WILL THE BIODIVERSITY OFFSET BE MANAGED?

Activity 2 of the diagram above looks at the roles and responsibilities of potential stakeholders as well as the legal and institutional aspects. The process for evaluating and analyzing the implementation arrangements should also follow certain discrete steps, noted below.

Roles and Responsibilities. There are several key entities involved in implementing an offset, each one with specific functions. A short description of each is provided below, with additional discussion of selected aspects following.

1. The **project developer** is responsible for hiring an approved EIA company to develop the EIA and the offsetting proposal, which must be in compliance with the Mozambican legal framework. The project developer is also responsible for assuming the costs of the EIA, the offsetting proposal, and the offset over time.
2. The **environmental regulator** (MITADER) is responsible for guiding the EIA process, including the establishment of regulations, the establishment of specific regulations, norms, and practices, and enforcing compliance with these. Specifically, the EIA Department of MITADER approves and monitors Biodiversity Offset Management Plans, which are considered an annex to the EIAs.
3. The **offset area manager** (typically ANAC, in the case of a protected area being chosen as the offset implementation site) has overall responsibility for the implementation of the offset as planned. The day-to-day implementation of the offset is the responsibility of the individual protected area management entity. Sometimes this is a state organization, sometimes a delegated NGO or foundation, or a private entity. The day-to-day implementer is responsible for transforming the cash flow into the planned conservation results on the ground. An offset area manager may call on support from other stakeholders such as NGOs; partnerships with other entities are part and parcel of conservation area management in Mozambique as Mozambique has been flexible and innovative in its approach to the management of protected areas. One of ANAC's key objectives, set out in its creation decree, is the "establishment of partnerships for the management and development of Conservation Areas." This allows for some flexibility and innovation in terms of offset management as well. Responsible offset design should include this aspect, so that protected area managers competence can be built over time and the sustainability and permanence of the offset enhanced.
4. The **funds transfer mechanism** is responsible for management of the offsetting funds advanced by the project developer. The fund transfer mechanism holds funds in trust, manages them to generate interest, and participates with the offset manager and MITADER in monitoring the results of the offset.
5. **Project financiers** (international banks, etc.) will, in the end, fund the offsetting process. Many of these have their own standards, such as the IFC 2012 performance standards, and thus the Mozambican process is designed to align with these.
6. **Other stakeholders** (NGO's, local communities, etc.) play a number of different roles in offset design. Most Mozambican conservation areas have structured relationships with a variety of these, ranging from technical support to community development programs, community communications programs, and outreach. All recent management plans include strong community outreach programs, for example. Involvement of these stakeholders is widely recognized in Mozambique to be fundamental to the achievement of any conservation results whatsoever on the ground, so stakeholder engagement planning must be a part of any offset proposed.

The BBOP manuals hold a great deal of useful material to help Mozambican stakeholders and regulators to further clarify the role of each of the main actors in the process. The forthcoming Biodiversity Offsets Toolkit of the World Bank will similarly be a good source of information.

Depending on the types of biodiversity affected under the main project, it may be possible that there are like-for-like offsetting possibilities in more than one protected area. An example might be the case of the Niassa Reserve which is surrounded by a number of privately managed hunting areas. In cases like these it may be desirable to divide the offset among more than one PA, in order to take into account the potential impacts of unanticipated events (enhance sustainability through replicates), promote healthy competition, and to create opportunities for performance-based management.

Privately managed conservation areas (the official hunting areas, *coutadas*, and game farms, *fazendas*) areas comprise nearly 65 percent of the land area within Mozambique's total protected area network. The strength of the private managers must not be overestimated however. Private operators suffer many of the same financial and technical restrictions that the government does. One illustrative statistic is that as of May 2015, only four out of the 50 game farms in Mozambique have an approved management plan. There is much room for improvement and capacity building and thus scope for additionality.

Institutional Capacity Building. Where the existing institutional capacity to carry out specific offset activities is lacking, it may be necessary to contract technical assistance, to ensure that appropriate protection and restoration functions can be carried out. There are a wide variety of potential partners to assist with implementation. Technical assistance may be carried out by either conservation professionals or NGOs with the requisite experience. One key task that needs to be carried out during the pilot phase is to develop templates for these agreements, in order that the necessary tenders can be easily launched when needed, and that quality standards for technical assistance be established and upheld.

Biodiversity Offset Management Plan. The key document to be elaborated is the Biodiversity Offset Management Plan (BOMP), which would describe the planned offset as well as all other biodiversity-related measures to be taken under the project. The BOMP will be an integral part of the Environmental Management Plan of the

proposed project, but is mentioned as a separate report to ensure that the planned offset, as well as other biodiversity-related measures, receive sufficient attention. Once the biodiversity offset (as described in the BOMP) is approved as part of an official EMP, the regulatory responsibility for oversight of the offset (and all of the EMP) is taken over by the Environment Ministry. If the designated offset area is part of Mozambique's Conservation Area network, then ANAC would assume management oversight. The funding mechanism will also need to be involved in monitoring and evaluation functions. All will need to develop additional technical capacity to fulfill these functions.

There are several legal questions, some resolved, some still open:

1. Transfer of Offset responsibility upon sale of assets. As long as an offset is a voluntary endeavor then any new owner of a development has the authority to terminate it. However, if BOMPs are formal annexes to the EIA they become part of the overall EMP for the project. Once approved by MITADER, the EMP has the force of law and is transferable, should the asset be sold.
2. Legal responsibility for an offset failure. If funding is passed through the BIOFUND to protected area management entities, and the offset does not produce the required level of biodiversity impacts to achieve no net loss, who is responsible for this failure? In fact, in the private sector this is a well-established issue. Under national law, the original developer is in almost all cases responsible for their impacts, yet in many cases the actual implementation is done through sub-contractors. As a result, developers have evolved detailed procedures for contracting service providers, setting out all the conditions and caveats, as well as specifying the specific responsibilities of the service providers to rectify failings, adhere to company standards, and continue to apply these standards to their own sub-contractors as well. However, this is a totally new field for most protected areas, as well as CTFs such as the BIOFUND. Most

funding for conservation comes in the form of grants and donations, and while performance is expected, the achievement of impacts is not contractually binding. Obviously, conservation is both a complex field and one that shows results over long timeframes, usually far longer than the lifespan of any particular project. What this means is that the mindset and thus administrative and bureaucratic procedures of conservation areas are not currently equipped to deal with the kind of detailed contracts that the private sector will be expecting. Training on this issue, as well as the development of good model contracts, will be crucial.

Utilizing the Conservation Areas network as the main source of likely biodiversity offset sites will reduce the complexity of establishing a viable biodiversity offset. In those cases where it might be necessary to have offsets established outside of the existing Conservation Area network, the new offset site(s) will need to obtain some form of long-term legal protection (some options have been suggested earlier). In both cases, however, a binding and sufficiently detailed legal agreement between the project developer, offset implementer, regulating entity, and interested financial institution will be critical to project success. A key task that should be carried out during the pilot phase is to develop templates for such legal agreements to facilitate the process in the future.

ACTIVITY 3: HOW WILL THE BIODIVERSITY OFFSET BE FUNDED OVER TIME?

Funding Mechanism. If biodiversity offsets are implemented in the manner suggested by this roadmap, funds would flow from a project proponent to the BIOFUND, and then to the offset implementer on the ground, typically in one or more Conservation Areas. The actual recipient of the offset funds will differ, depending on the particular Conservation Area (or possibly other offset site) chosen. During the consultations for the development of this roadmap, several stakeholders noted that one-off transfer of the funds required to fund the offset for the full period of time required may frontload start-up costs significantly for

project developers. Insurances and bank guarantees were suggested as suitable compromises. The model would be for a project developer to transfer, for example, a 5-year tranche of funds to the funding mechanism, and simultaneously purchase an insurance product to guarantee payment of future tranches in the case of the original company being unwilling or unable to provide more funding. This is conceptually similar to a bond for mine closure and rehabilitation, ensuring that even in the case of bankruptcy the permanence of the offset should be secured. Given the typical “boom and bust” cycle of many extractive industries, the option of allowing project proponents to manage their own funds and disburse annually was considered an unacceptable risk to permanence and so is not recommended. Note that offsets established as annexes to EIAs have legal force and the obligations described therein do transfer with the asset should it be sold.

ACTIVITY 4: HOW WILL THE OFFSET BE MONITORED AND EVALUATED?

Quality Control of Offset Implementation.

Monitoring and oversight of offset implementation will need to be done on a number of different levels. The project developer will need to receive regular reports on the biodiversity impacts being realized. The financial intermediary (as proposed here, the BIOFUND or similar institution) will need not only these biodiversity reports but also more detailed financial reports on how the money is being spent. ANAC, the overall PA supervision and regulatory body, will also need to be involved. It also may be important to involve other local stakeholders like NGOs and communities in offset monitoring as well.

The monitoring and evaluation framework as well as key performance indicators should have been defined in the Biodiversity Offset Management Plan. While impact results will only be available in the medium to long term, the monitoring and evaluation framework must be robust enough so that it can track progress towards objectives, to determine that the offset implementation is or is not on track.

If the protected area is not performing, then the BIOFUND, together with ANAC and the project proponent will need to make adjustments, either in the management approach or the management technical partner; there seems to be a natural hierarchy of response that could be formally developed to guide ANAC, BIOFUND, the Environment Ministry, proponents and other stakeholders in making these kinds of decisions and recommendations.

Despite the importance of monitoring and evaluation, it is in fact the weakest element of the EIA process in the current legal and political context. Unlike the EIA phase, Mozambican legislation does not require public presentations or consultations on the company's compliance with the approved EMP, nor are the monitoring reports made public. The Environment Ministry is solely responsible, yet follow-up and real-time monitoring of actual project impacts already exceeds the Environment Ministry's current capacity.

A solution⁵⁰ to these problems can be found in an analogy to the peer review process. This would be creation of an Expert Technical Council (ETC) to accompany and fortify government monitoring over time. The new draft EIA regulations propose that an ETC be formed in much the same way as a peer review panel. Once in place, the ETC would have the responsibility to work with the staff of the Environment Ministry and other monitoring bodies to review and monitor the implementation progress of the EMP, Compensation Plans, Resettlement Plans, and Biodiversity Offset Management Plans. The ETC will effect regular annual monitoring as well as monitoring of specific phases of activity where risks are particularly high and technical oversight is needed. The ETCs will also be tasked with producing independent monitoring reports that are in the public domain. As mentioned earlier, funds for monitoring are budgeted into the cost of the offset, just as funding for monitoring of a construction project is included in the cost of the building. An ETC would be created for all category A+ projects, and a variety of mechanisms

are built in to the process so that sufficient arm's length distance is maintained.

It is impossible within a roadmap to lay out all the specific details of how quality control, monitoring and evaluation, and other processes should be implemented. Filling in these details will be part of the ongoing implementation of aggregated offsets in Mozambique. It is important to note here that IUCN and Rio Tinto have developed a protocol for third party monitoring/reviewing of No Net Loss progress via expert panels, and thus these would be good discussion partners for the development of national protocols.

A specific moment where new, detailed national quality control protocols can be enshrined in legislation is the revision of the *Regulamento Especifico*, or the Specific Regulations for EIA, a MITADER internal planning document that complements the general regulations currently under revision by the government. Revision of a *Regulamento Especifico* follows the revision of the general regulations that it complements.

Learning and Training

In order to prepare the ground for the success of any new program, training and institutional learning must be factored in from the very beginning. Training programs should be planned and carried out to ensure that the skills necessary for adequate offsets are developed within national institutions. This is a new area and it will take time to develop these skills. Staff from the environmental impact assessment companies, environmental officers of project implementers, environmental specialists from the NGO community and universities, Conservation area managers, and government regulators should be in the forefront of these training programs. AMAIA, the Mozambican Association of Environmental Impact Assessment, will be a key partner. IFC training programs on PS6, currently under development, may be a useful training tool.

There are a large number of specific training programs that must take place. These include not only general awareness programs about offsets and their importance for companies, government entities, and larger civil society, but also highly

⁵⁰ Proposed by Nazerali, S. 2014. "Improving the Quality, Capacity and Compliance of Environmental Licensing Processes in Mozambique: The Case of the Oil and Gas Industry." SAIIA.

technical training on metrics and methodologies. This is a clear role for the proposed upcoming project on biodiversity offsets *Compensation des Dommages aux Écosystèmes et à la Biodiversité*, currently under development by MITADER and the Wildlife Conservation Society and to be funded by the French Global Environment Facility/ Fonds Français pour l'Environnement (FFEM) and the French Development Agency (AfD). To develop capacity in biodiversity offset metrics, it will be important to establish detailed criteria and protocols for the measurement of impacts, as well as for the evaluation and monitoring of changes in biodiversity value of different habitats. After being field-tested, technical criteria should be shared, consensus built, and then, to the extent feasible, be codified within binding legal regulations.

One recommended step should be the creation of a core group of specialists, drawn not only from the regulatory entities, but also from the major private EIA companies, NGOs and other specialist bodies, and the academic world, who would be specifically involved in analyzing and reflecting on the first set of offsets and developing these technical guidelines. This group would receive extensive extra training as well as benefit from exchange programs with functioning offsets both in country and abroad and would give rise to a national body of specialists who can begin to guide offset design and implementation in Mozambique. As experience is built, increasing numbers of people should be drawn into this network, from all the main sectors of society.

Roadmap for the Way Forward

The following is a summary of steps needed to establish an aggregate offsets system in Mozambique, as extracted from the previous sections. Some suggestions on tasking and timing are also included.

Preparatory Activities, the Building Blocks

Under an aggregate offsets system, biodiversity offsets are developed systematically within a larger landscape context. Four building blocks need to be in place.

LEGISLATIVE FRAMEWORK

The EIA regulations have just been revised by MITADER. During this process the concept of offsets was incorporated into the draft version used for public consultations, which was prepared with the technical support of this Roadmap's contributors and author. As mentioned earlier, following stakeholder consultation and discussion it was decided by the government of Mozambique to refer this matter to specific legislation due to its complexity and innovative nature, as well as due to the fact that the 2015 revision specifically excluded the mining and petroleum sectors, which are both the most likely and the most needed sectors for offsets. It is important now to take advantage of the rich contributions made during the recent revision process to inform the preparation of offset-specific legislation.

Following the passage of the new EIA regulations, there are several supporting legal elements that need to be enacted. These will include the specific guidelines for the peer review processes as well as crucially important aspects of

monitoring and follow up of EMPs, a task which has been passed to the new AQUA.

HIGH LEVEL GOVERNMENT COMMITMENT

Key ministries are in support of this initiative, and it also has broad-based support among industry, as the results of the in country seminar held in January, 2015, show. It is therefore possible that something very close to consensus across broad sectors of society can be achieved. It will be important going forward to build lobbying blocks and create effective messaging to inform government and lawmakers of this broad base of support. Preparation of a stakeholder engagement plan and a communication plan are highly recommended. A Biodiversity Offsets Working Group, consisting of members from government, civil society, and the private sector has been constituted and has now met several times under the auspices of BIOFUND to explore collaboration in this area. This Working Group should be utilized as a project advisory committee for the *Compensation des Dommages aux Écosystèmes et à la Biodiversité* project (CDEB), to be starting in mid-2016. Building in mechanisms for stakeholder engagement and dialogue right at the beginning mean more involvement and more ownership by stakeholders in the initiative.

By the same token, it is necessary to create a small committee of "champions" within government, who can meet, perhaps initially on an ad hoc basis but later as implementation procedures are developed, on a more formal basis, to establish and build within government the necessary capacities and procedures to implement aggregate biodiversity offsetting. And of course there will be a need to find a way to link the government

champions and civil society stakeholders in a dialogue process.

One strong communication point is No Net Loss may actually make certain types of large development projects move more quickly, with fewer adverse impacts than the current practice. The logic here is that so much international finance already depends on compliance with the IFC Performance Standards that the development of a national biodiversity offsetting system would not mean an increase in requirements; rather, it would streamline compliance by providing clarification regarding the specific circumstances under which offsets are required, along with when and where an offset should be applied.

MAPPING AND GAZETTING OF OFFSET AREAS

Much of Mozambican biodiversity is already found within the protected areas network (remembering of course that protected areas are broadly defined to include privately managed areas such as game farms within the Mozambican legislative context). There are however some gaps including the Swahili coastal forests of Cabo Delgado province, the area of Monte Namuli and Monte Mabu, in the marine area from Zavora to Pomene and centered on Tofo, and in the southern coastal dunes as well.

Biodiversity within the protected areas should be not only more accurately mapped, but also quantified as far as possible and have its current state of preservation assessed. This could be done either together with the revision of Management Plans or as a separate exercise. BIOFUND has already begun a mapping process, which actually includes the whole country, but this map has only been able to identify the broad geographic distribution of important habitats. Completion of this mapping process is the next step, with perhaps additional steps having to do with continuous, iterative improvement as research continues and more and more knowledge is generated. To enable this, one important step will be to establish a database, currently suggested to be within the BIOFUND, as well as an annual conference on Mozambican biodiversity, where newly generated knowledge can consciously be added to the database and analyzed by peers and specialists. This will mean

that the database is a living thing, adapting and changing over time.

For biodiversity that is not represented within the current protected areas network, a mechanism has been described within the text that is already workable for bringing these areas under protection. It is suggested to use some of the new categories established by the New Conservation Law (16/2014) to facilitate this process, as well as to share responsibility during subsequent management.

As noted earlier, BIOFUND has mapped the whole country, and so this will be a tool to be used by project developers not in a prescriptive but rather in a descriptive sense, helping them at least avoid more obvious superpositions with unique, natural and/or critical habitats.

TRUST FUND ESTABLISHMENT

Mozambique has an existing CTF that satisfies international standards, the BIOFUND. The BIOFUND fulfills all the essential criteria for a well-governed, independent trust fund that can receive, manage, and disburse funds for offsets over time. At present, BIOFUND still lacks a monitoring and evaluation system that can track biodiversity outcomes, as well as final disbursement procedures. Finishing these is a priority.

Space will be left open for the establishment of other trust funds as well within this Roadmap, should any other entity wish to create one that satisfies international criteria.

Preparatory Activities, Development of Implementation Mechanisms

IDENTIFICATION OF AREAS WHERE BIODIVERSITY OFFSETS MAY NOT BE APPROPRIATE OR FEASIBLE

This roadmap has begun the discussion of a national interpretation of “No Go” limits, critical, and natural habitats in previous sections. The BIOFUND Habitat map also extends this

discussion. The revision of the EIA Regulations (*Decreto* 54/2015) has added a very useful annex defining no go areas, using the definition of Tier 1 Critical Habitat as specified in the IFC PS6 Guidance Notes, as well as specifically protecting PAs classified as total protection areas.

What is needed now is to create a mechanism to finalize and formalize a national interpretation of critical and natural habitats. This mechanism should include a mechanism for technical review and consensus, formalization, divulgation, and updating as more knowledge becomes available. Government will need to be involved as well as the scientific community. The annual conference on Mozambican biodiversity may be a strong opportunity here, with the BIOFUND database serving as the official data repository. The Integrated Biodiversity Assessment Tool (IBAT) may be a good resource as well for the development of national standards and tools.

This roadmap suggests that the best way forward should be to begin immediately implementing what we know, but creating learning, communication, and dialogue mechanisms to make sure that learning continues over time, rather than engaging in a national strategic planning process.

Open questions discussed in this document include:

- Decisions about how to handle **residual impacts on ecosystem services** need to be addressed. This roadmap has also opened this discussion, suggesting that in Mozambique those ecosystem services that can be offset should be (generally ones delivered at regional, national, or larger scale), and others resolved through compensation mechanisms and stakeholder engagement;
- Decisions about how to **measure loss and gain of biodiversity** are important. Perhaps the best approach is to systematically and iteratively build upon existing and global best practice, over time allowing experience and precedent to influence the evolution of approaches to measure specific habitats and species in all of their variety. It is suggested that the IFC

be a formal discussion partner in this design, so that standards for Mozambique will be as close to IFC performance standards as possible. Documentation and dialogue are two key instruments here.

DEVELOPMENT OF MANAGEMENT AND COORDINATION STRUCTURES

Offset design, implementation, and monitoring all require the development of management and coordination structures. To the extent possible, offsetting has been integrated into the day-to-day procedures of the EIA regulatory entity within MITADER. There are however moments and mechanisms that require the input of others:

- General mechanisms for the creation and management of peer review panels have been included in the new EIA Regulations (54/2015), but these need to be much more clearly outlined, as well as extended to technical specialist monitoring teams after the licensing process.
- BIOFUND is established and it is suggested that this serve as a focal point for the scientific discussions surrounding habitats, species, ecosystem services, measures, etc.
- ANAC, as the responsible entity for protected areas management, is fundamental in offset implementation.
- Project developers have to be involved, so that any solutions proposed to fit their needs as well;
- Other civil society stakeholders, the universities, local communities, and others, need to be involved as necessary. It is especially important to note the role of local communities, as their involvement is essential for any offset to be successful.

This roadmap is not prescriptive about what sort of coordination mechanisms are necessary. This perhaps should be allowed to evolve over time. However, initially, at least two committees should be structured. The first is a sort of governmental “champions committee”, composed of interested and relevant government officials and/or departments, all of whom will work together to

build the required structures and processes within the governmental apparatus. This will need to include at least DNAB, AQUA, ANAC, and perhaps others. These should be supported on a formal basis by representatives from BIOFUND as well as the new CDEB project.

The second committee will be composed of relevant and interested civil society stakeholders, working to build the extra-governmental components of biodiversity offsetting; the maps, the scientific consensus about habitats and species, identifying interested project developers, etc. It is suggested that the World Bank, the IFC, BIOFUND, the Universities, some project developers interested in implementing pilot offsets, and WCS are the minimum necessary here, though there should be very many others also interested. Anadarko, Sasol, and Syrah Resources have both publicly stated their commitment to offsets and may be good private sector candidates here. Other candidates may come from the area of the new Marine Protected Area in the Primeiras and Segundas Islands. Several mining concessions as well as other investments lie within the coastal portion of this Marine Protected Area and, by law, they are required to fully compensate for any damages caused to the ecosystem. There may be game farm managers or private conservation area managers also interested in participating. Namoto Safaris in Palma district has already been contacted by an Anadarko subcontractor, for example, to discuss offsetting possibilities.

Both of these committees should be tasked with creating (first draft) working arrangements and processes, which can be formally tested over the implementation of, say, two to five offsets, followed by a formal evaluation, tweaking, and redesign (if necessary) process.

A subject still open for investigation which these two initial committees should look into would be the use of insurance type products to guarantee offset payments over time.

The BBOP manuals are a useful resource for these two committees.

Pilot Experiences

As soon as possible, the two committees should guide between two and five pilot projects to the offset design process, followed by a formal evaluation and improvement exercise.

Learning and Training

Training and institutional learning must be factored in from the very beginning. Training should be directed towards the following groups.

- for ANAC and conservation area managers, about how to manage an offset;
- for AMAIA, university staff, and specialists who might peer review or serve on monitoring teams, about offset design, implementation, and monitoring;
- for project developers, about legal requirements and offset design and processes; and
- for government officials, especially DNAB and AQUA, on supervision, control, and monitoring of offsets.

The *Compensation des Dommages aux Écosystèmes et à la Biodiversité* project staff team will need to recognize that little capacity exists for biodiversity offset management as of present in country, and therefore will need to rely on bringing in outside trainers, coaches, and back stoppers, to be paired with the above student groups, during the initial years of the project. The project should however be able to make great use and build on the successes so far, particularly the efforts of MITADER and BIOFUND.

Conclusions

Mozambique seems to be well positioned to take advantage of new levels of biodiversity protection and new revenue streams for conservation that No Net Loss and biodiversity offsetting can provide, in a manner that can minimize the environmental damage resulting from rapid economic development, particularly by extractive industries.

It is judged that it is both feasible and desirable to advance with the development of national compliance No Net Loss legislation and mechanisms, and an aggregate biodiversity offset program for Mozambique. This roadmap has been somewhat overtaken by events with respect to legislative revision in that the government is currently revising existing EIA regulations and has specifically requested the help of selected specialists from civil society to build a compliance aggregate biodiversity offsetting/ no net loss framework within existing EIA processes. This new framework also includes peer review and independent specialist monitoring for all category A+ projects in order to improve technical quality, sustainability, and probabilities of success.

The national protected areas network is judged to be representative of much of the biodiversity of Mozambique, and as such is the preferred first option for the siting of offsets. There are however some areas of known biodiversity that are outside of this protected area network, and many of these have been highlighted in the text. A mechanism has been proposed for dealing with these exceptions. The term “protected area” in Mozambique includes privately managed areas such as sanctuaries, hunting concessions, and game farms.

Stakeholder engagement and communications will be important to build understanding and support within key governmental and private sector stakeholder groups, as well as among the public at large. Governmental willingness is likely to grow to the extent that biodiversity offsetting is seen as compatible with existing national goals. Private sector willingness will be generated to the extent that a biodiversity offsetting scheme offers real assistance to those obliged to offset. Broad public support will depend on the extent that biodiversity conservation is seen to be compatible with and supportive of human livelihoods.

Bibliography

- Business and Biodiversity Offsets Programme (BBOP). 2012. Biodiversity Offset Design Handbook-Updated.
- Business and Biodiversity Offsets Programme (BBOP). 2012. Standard on Biodiversity Offsets. Available along with other BBOP documentation at <http://bbop.forest-trends.org/guidelines/>
- C. A. Rohner, S. J. Pierce, A. D. Marshall, S. J. Weeks, M. B. Bennett, A. J. Richardson. 2013. Trends in sightings and environmental influences on a coastal aggregation of manta rays and whale sharks. *Marine Ecology Progress Series*. Vol. 482: 153–168.
- Clarke, G. P. 1998. A new regional centre of endemism in Africa. In: *Chorology, Taxonomy and Ecology of the Floras of Africa and Madagascar*. Huxley, C. R., Lock, J. M., and Cutler, D. F. (Eds.) (1998). Royal Botanic Gardens, Kew, UK.
- Clarke, G. P. 2000. Climate and climatic history. In: *Coastal Forests of Eastern Africa*. Burgess, N. D. and Clarke, G. P. (Eds.) (2000). IUCN Publications Services Unit, Cambridge, UK.
- Clarke, G. P. 2000a. Defining the eastern African Coastal Forests. In: *Coastal Forests of Eastern Africa*. Burgess, N. D. and Clarke, G. P. (Eds.) (2000). IUCN Publications Services Unit, Cambridge, UK.
- Clarke, G. P. and Robertson, S. A. (2000). Vegetation communities. In: *Coastal Forests of Eastern Africa 2000*. Burgess, N. D. and Clarke, G. P. (Eds.) (2000). IUCN Publications Unit, Cambridge, U.K.
- Clarke, G. P. 2011. Observations on the vegetation and ecology of Palma and Nangade Districts, Cabo Delgado Province, Mozambique. Downloaded from <http://coastalforests.org/>
- Cowling R. M., Richardson, D. M., and Pierce, S. M., eds. 1997. *Vegetation of Southern Africa*. Cambridge University Press, p 399.
- Crook, L. et. Al. 2012. Natural Gas Master Plan for Mozambique: Final Report. ICF International.
- Direcção Nacional das Áreas de Conservação. 2009. Reserva Especial de Maputo, plano de gestão. Ministry of Tourism, Mozambique. Maputo.
- Equator Principles, A financial industry benchmark for determining, assessing and managing environmental and social risk in projects. 2013. Available at www.equator-principles.com
- ERM and Consultec. 2006. EIA for Sasol's Offshore Exploration Project in Block 16 & 19, Inhambane and Sofala Provinces, Mozambique.
- ICMM IUCN. 2012. Independent Report on Biodiversity Offsets. Prepared by The Biodiversity Consultancy.

- Impacto Projectos e Estudos Ambientais Lda. 2011. Liquefied Natural Gas Project in Cabo Delgado Pre-Feasibility And Scope Definition Report And Terms Of Reference. Maputo. Draft for Public Consultation from September, 2011.
- Impacto. 2007. Hydrocarbons Exploration Project in the Onshore Block of the Rovuma Basin—EIA. Maputo: Impacto Lda.
- Instituto Nacional de Petroleo. <http://www.inp.gov.mz/Exploration-Production/History-of-Petroleum-Exploration-in-Mozambique2>
- International Finance Corporation. 2012. Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources.
- Madsen, B., Carroll, N., & Kelly, M.B. 2010. State of Biodiversity Markets Report: Offset and Compensation Programs Worldwide. Available at <http://www.ecosystemmarketplace.com/documents/acrobat/sbdmr.pdf>
- Ministry of Environmental Coordination. 2012. Relatório De Avaliação Ambiental Estratégica Do Desenvolvimento Ao Longo Da Zona Costeira De Moçambique. Volume III—Diretrizes e Recomendações. Draft for consultation.
- Ministry for the Coordination of Environmental Affairs (2014). Fifth National Report on the Implementation of Convention on Biological Diversity in Mozambique. Maputo. MICOA
- Ministry of Environmental Coordination. Estratégia e Plano de Acção para a Conservação da Diversidade Biológica de Moçambique. 2003 –2010
- Ministry of Planning and Development, Office of the National Director of Studies and Analysis of Policies, Poverty, and Wellbeing in Mozambique. 2010. Poverty and Wellbeing in Mozambique: Third National Evaluation. Mozambican Ministry of Planning and Development. Maputo.
- Ministry of Tourism. 2004. Management plan for the Gile National Reserve. Ministry of Tourism, Mozambique. Maputo.
- Ministry of Tourism. 2004. Management plan for the Quirimbas National Park. Ministry of Tourism, Mozambique. Maputo.
- Myers, N., Mittermeier, R.A., Mittermeier, C.G., da Fonseca, G.A.B. & Kent, J. 2000. Biodiversity hotspots for conservation priorities. *Nature* 403: 853–858.
- Nazerli, S. et al. 2015. Plano Financeiro para o Sistema de Áreas de Conservação em Moçambique—Proposta de Relatório Final. Preparado pelo Verde Azul para ANAC com apoio do PNUD.
- Nazerli, S. 2014. "Improving the Quality, Capacity and Compliance of Environmental Licensing Processes in Mozambique: The Case of the Oil and Gas Industry." SAIIA.
- Parker, C., Cranford, M., Oakes, N., Leggett, M. ed. 2012. The Little Biodiversity Finance Book, Global Canopy Programme; Oxford.

- Pereira, M. A. M., C. Litulo, R. Santos, M. Leal, R. S. Fernandes, Y. Tibiriçá, J. Williams, B. Atanassov, F. Carreira, A. Massingue & I. Marques da Silva 2014. Mozambique marine ecosystems review. Final report submitted to Fondation Ensemble. 139 pp. Maputo, Biodinâmica/CTV.
- Radon, Jenik, Supervisor, Mozambique. 2013. Mobilizing Extractive Resources for Development. Columbia University's School of International and Public Affairs.
- Science Policy Council, U.S. Environmental Protection Agency. 2006. Peer Review Handbook 3rd Edition. EPA/100/B-06/002.
- Serra, C. 2008. Fortalecendo o quadro legal e institucional do desenvolvimento Petrolífero em Moçambique, WWF Moçambique.
- Sitoe, A. et al. 2015. Mapeamento de Habitats de Moçambique. CEAGRE—Centro de Estudos de Agricultura e Recursos Naturais da Faculdade de Agronomia e Engenharia Florestal da Universidade Eduardo Mondlane. Available at <http://www.biofund.org.mz/habitats/>
- Sociedade para a Gestão e Desenvolvimento da Reserva do Niassa (SRN). 2007. Niassa National Reserve management plan. Ministry of Tourism, Mozambique. Maputo.
- Tua, J. e Nazerali, S. 2010. Assessment of Data on Both Sides of the Financing Equation for Mozambique's Conservation Areas. Report prepared with support from UNDP.

Relevant Legislation

Environmental Law (Law n.º 20/97 of 1 October)

Lei de Terras (Land Law), (Lei No. 19/97 de 01 de Outubro)

Mining Law (20/2014)

Petroleum law (Law 21/2014)

Conservation Law (16/2014)

Regulamento de Operações Petrolíferas (Decreto N.º 24/2004, de 20 de Agosto)

Environmental Regulations for Petroleum Operations, Decree 56/2010

Regulamento Ambiental para a Actividade Mineira—Decree 26/2004

Regulamento relativo ao Processo de Auditoria Ambiental—Decreto n.º 32/2003, de 12 de Agosto

Regulamento sobre Padrões de Qualidade Ambiental e de Emissão de Efluentes—
Decreto n.º 18/2004, de 2 de Junho

Regulamento sobre o Processo de Avaliação do Impacto Ambiental—Decreto n.º
45/2004, de 29 de Setembro

Regulamento sobre o Processo de Avaliação do Impacto Ambiental—Decreto n.º
54/2015, de 31 de Dezembro

Regulamento sobre a Inspeção Ambiental—Decreto n.º 11/2006, de 15 de Junho

Regulamento sobre Prevenção da Poluição e Protecção do Ambiente Marinho e
Costeiro—Decreto n.º 45/2006, de 30 de Novembro

Government 5 Year Plan (Parliamentary Resolution 12/2015, of 14 April)

Estatuto Orgânico do Fundo do Ambiente—Decreto n.º 39/2000, de 17 de Outubro

Estatuto Orgânico do Conselho Nacional de Desenvolvimento Sustentável—Decreto
n.º 40/2000, de 17 de Outubro

